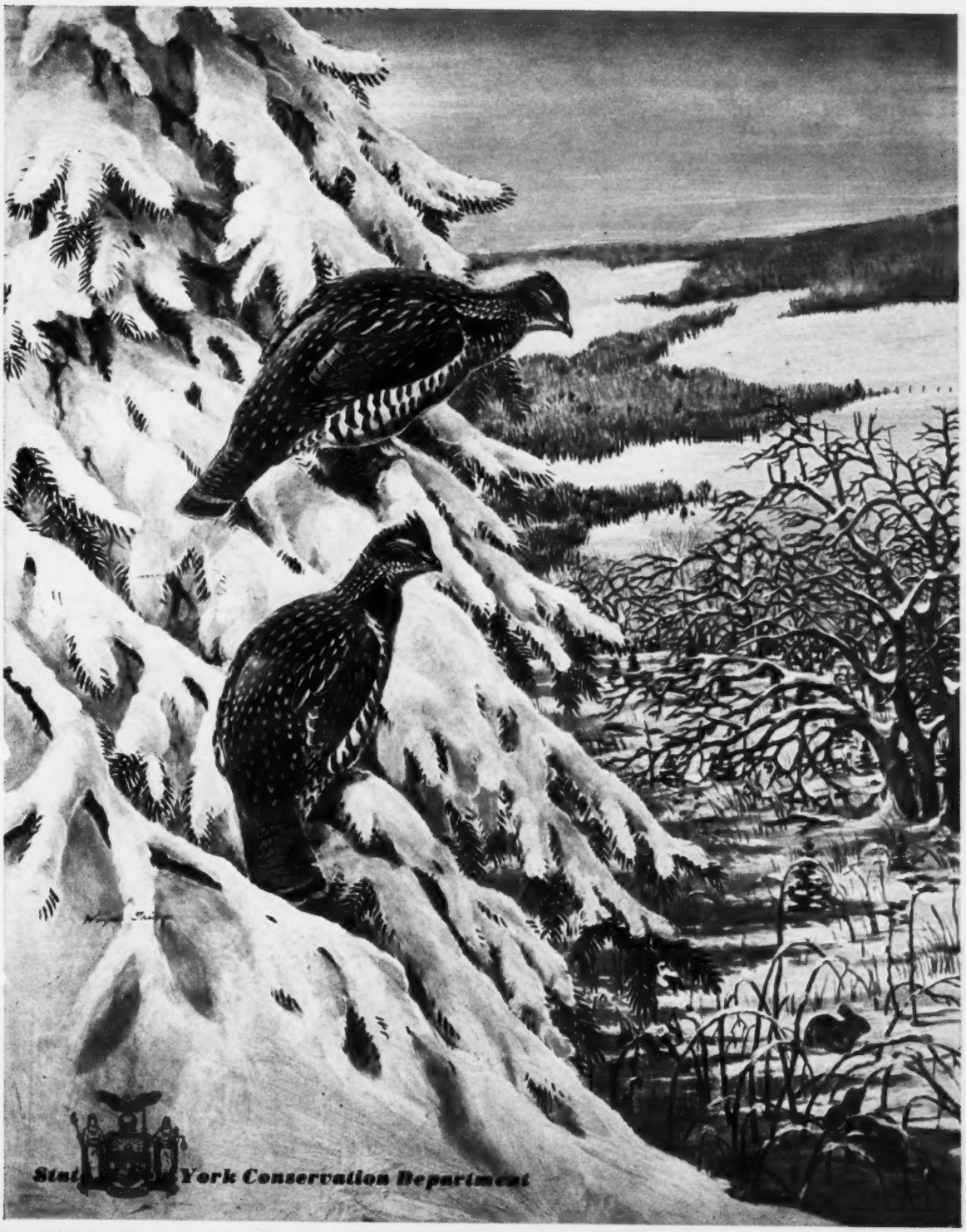
The New York State

Conservationist

February-March 1959



State of New York Conservation Department

Mid-Winter Musings

Well, here we are again at Mid-winter, or thereabouts. Some — and we're among them—are glad to see a good part of the Winter marked off on the calendar. But although we're getting a little fed up with ice and snow, bitter winds and zero temperatures, we'll admit that the season has some advantages.

There are the obvious ones, of course, like sliding down hill on skis, toboggans, bobsleds or what have you; cutting holes in the ice to accommodate a rig of tip-ups; following the hounds in their ever-joyous pursuit of snowshoe rabbits, or the almost always accommodating cottontail. Then there's all kinds of stuff indoors for the outdoorsman—standard type chores like tying up next season's quota of flies, cleaning and oiling reels, sanding down, rewinding and revarnishing the old favorite split bamboo, repainting those beat-up decoys, checkering the grip of that walnut stock —all things like that which sportsmen are always pictured as doing through the Winter months—and almost never do.

This is a good season, too, for meditating—especially if your meditating comes equipped with a fireplace; reviewing the accomplishments, if any, of the past year; generating an inward anger at the mistakes one has made, assuring yourself that you'll not be so stupid again and knowing that, nine times out of ten, you will. But experience, you've learned, does make the best building blocks and it's a fine time to construct plans for the future.

Letter writing, too. What better time than now to "take pen in hand?" But there's hardly need to point this out! Open "pen and paper season" is here! Mail arrives nowadays, not in the usual bushel lots but by the bale. Nothing wrong with that, though; awfully good way to keep track of what the other fellow is thinking.

And meetings—ah, here's where the Mid-winter season shines! Even really laudable organizations that rarely besmirch their records otherwise fall prey to the Mid-winter meeting virus and rally their members in convention. This, truly, is the critical time for the public servant. If he can win through this season, surviving flock after flock of cold turkey and colder coffee, hard-bottomed chairs, blue-gray air and acousticless auditoriums, then he has indeed proved himself once again and deserves the blessed respite of Spring.—Editor

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Conservationist

FEBRUARY-MARCH, 1959

Contents

VOLUME 13 **NUMBER 4**

FIRST COVER		***H. Wayne Trimm***
SECOND COVER		***Leonard Lee Rue III***
THE FISH AND WILDLIFE MGT. ACT	*2*	***E. L. Cheatum***
THE SOIL BANK FOR '59— A PROGRESS REPORT	*6*	***A. W. Bromley***
THE STATE PARKS OF CENTRAL N. Y. AND THE THOUSAND ISLANDS	*8*	***Samuel Perry, Ralph G. Wallace***
PREDATION, DEPREDATION OR COMPETITION	*12*	***Maurice M. Alexander***
WINTERKILL	*14*	***U. B. Stone***
CEDAR LAKES RANGER STATION	*16*	***M. C. Fisk***
CONIFER PLANTATIONS AND WILDLIFE	*18*	***Robert Leo Smith***
THE "KITCHEN KONFERENCE"	*21*	***Albert G. Hall***
ADIRONDACK CHICKADEE	*22*	***Jane Hutchinson***
MOLES AND SHREWS OF NEW YORK	*23*	***W. J. Hamilton, Jr.***
CENTERSPREAD		***H. Wayne Trimm***
OUR STATE FORESTS— A GROWING ASSET	*27*	***R. Milton Hick***
FOMES ANNOSUS	*29*	***John H. Risley, William E. Smith***
ASHOKAN RESERVOIR	*30*	***Cecil E. Heacox***
BATTLE REPORT ON WATER CHESTNUT	*32*	***John R. Greeley***
THE BACK OF THE BOOK	*34*	***(Scatter Shots, Etc.)***
LETTERS TO THE EDITOR	*42*	***(From Our Readers)***
MOLE HILL OUT OF A MOUNTAIN	*48*	***Clayt Seagears***
THIRD COVER		***Clayt Seagears***
FOURTH COVER		***Louis A. Fuertes***

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The Fish and Wildlife Management Act

Where Do We Stand and What of the Future?

by E. L. Cheatum, *Chief, Bureau of Game*

THE new Fish and Wildlife Management Act, as passed by the Legislature during its 1957 session, went into effect April 1, 1958. What is this Act? What has been accomplished since the Act's effective date? What can be accomplished under the Act in the future? We shall try in this article to answer these questions to the degree possible at this early stage in progress under the new program.

As a matter of fact, a beginning has been made, as you will recall if you read the February-March, 1957, CONSERVATIONIST. Therein, Dr. Gustav A. Swanson, Head of the Conservation Department at Cornell University, and the writer reported on the public hunting problem in New York State, and the nature of the program possibilities under the Fish and Wildlife Management Act for solutions to the problem. In brief, the problem was presented as a growing conflict between the interests of private landowners and the continually increasing number of fishermen and hunters afield looking for places to pursue their sport. As landowners become more annoyed (to put it conservatively) with larger numbers of sportsmen on their lands without permission, more lands are posted. This, in turn, intensifies the pressure upon remaining open lands, accelerating additional closure. And as always, some sportsmen are more fortunate than others. Some can afford to hunt or to fish on private preserves; many belong to sportsmen's clubs which develop various agreements with landowners to permit hunting or fishing by the members only.

But this does nothing for the unaffiliated sportsmen; those who cannot or do not belong to organized groups having special hunting or fishing privileges; those who cannot often afford to hunt upon privately-operated shooting preserves. The noose of posted lands is slowly tightening around the necks of these people. There's a real threat they will be choked off from hunting and fishing upon privately-owned lands and waters unless something is done and done soon to stem the tide. This was the challenge we outlined in the earlier article and we looked to the Fish and Wildlife Management Act for the solution.

One of the primary objectives of the Fish and Wildlife Management Act is to provide the Conservation Department with authority to develop and administer programs for fish and wildlife management in co-operation with private landowners. The programs are to include habitat restoration and improvement to promote natural propagation of fish and wildlife, and adequate supervision to assure an orderly harvest of fish and wildlife from the lands and waters affected.

District Boards

Perhaps most important of all, this Act provides for the development of these programs from proposals originating from Fish and Wildlife Management District Boards authorized by this law. Each District Board is composed of three representatives from each county comprising the District (see map of the 13 Wildlife Management Districts). The law provides that one representative must be a resident landowner on rural lands and actually engaged in the operation of such lands for production of agricultural commodities or forest products; in other words—a dirt farmer. One must be a member of the County Board of Supervisors; the third, a sportsmen's representative and resident of the county. In addition to the county representatives, the law provides that the Chairman of the Board of Directors of each Soil Conservation District and the chairman of each District Forest Practice Board within the Fish and Wildlife Management District shall be advisory members without vote. We are extremely pleased that representatives have been named to all thirteen District Wildlife Management Boards and that all are functioning.

These Boards provide a "grass roots" approach to planning and development of fish and wildlife management programs to be applied on a local or district level, and designed to meet the needs peculiar to each district. The Act defines their duties as follows: "Each District Board shall formulate a statement of fish and wildlife management practices appropriate for its district and submit it for approval to the State Board and the Conservation Commissioner. After such a statement of practices has been approved by the State Board and by the Commissioner, the District Board shall formally adopt such statement of practices and encourage landowners, lessees and sportsmen within the district to adopt and carry out the practices approved."

State Board

The State Board as provided for by the Wildlife Management Act, consists of an elected representative from each of the District Boards and ten advisory members without vote. The advisors or their designated representatives consist of the following: The Conservation Commissioner, the Commissioner of Agriculture and Markets, the Dean of the New York State College of Forestry, the Dean of the New York State College of Agriculture, the Chairman of the State Soil Conservation Committee, the Chairman of the State Forest Practice Board, the President of the New York Farm Bureau, the Master of the New York State Grange, the President of the New York State Conservation Council and the President of the New York State Division of the Izaak Walton League.

Duties of the State Board are: 1. Pass upon and approve or disapprove the fish and wildlife management practices formulated by the District Boards. 2. Formulate and recommend uniform fish and wildlife management practices for similar regions of the State. 3. Recommend to District Boards such policies and procedures for fish and wildlife management practices as it deems appropriate. 4. Keep the District Boards informed on programs and progress in other districts and provide co-ordinating aid in such programs. 5. May submit to the Commissioner recommendations on matters delegated by statute to the Department in any case where a statute or regulation of the Department may affect fish and wildlife management practices carried out under this Act.

Progress

The 1958 Legislature appropriated $135,000 to finance the first year's operations under the Fish and Wildlife Management Act. The Conservation Commissioner established, by order, the 13 Fish and Game Management Districts, and

enAct

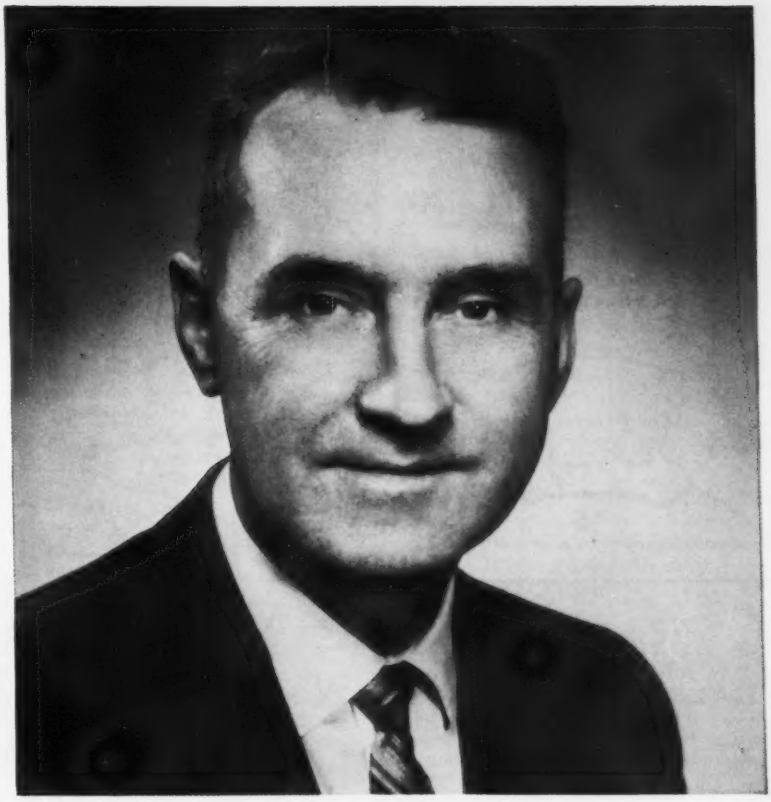
designated a Conservation Department representative from the Division of Fish and Game to work with each District Board. In the meantime, an administrative manual for the FWMA was prepared and distributed to the Department representatives and to each of the FWMA board members at their first organizational meetings.

Assistance to the boards in their planning work has been provided through the appointment of nine Biologist Aides. These men work under direct supervision of the Department's representatives to the boards and have been involved in assembling fish and game management information pertaining to the districts in which they have been assigned and in making field surveys on posting problems and other related matters as requested by the boards being served.

In general, the District Boards have been primarily involved in getting their respective feet on the ground as to their responsibilities, gathering an understanding of present Department programs in their districts, including those carried on by both the Division of Fish and Game and the Division of Lands and Forests and exploring the fish and game management problems which need to be solved in their communities. Some of the boards have made impressive progress in these activities, and prepared specific recommendations for consideration of the State Board at its first meeting.

This first meeting of the State Board was held at the Conservation Department's headquarters in Albany, December 9, 1958. All but one of the 13 District Boards had been organized by that time and each of their elected representatives was present. Eight of the ten advisory members were present or represented by a delegate. Guests from the Joint Legislative Committee on Revision of the Conservation Law were: Hon. Leo Lawrence, Chairman; Assemblyman Edwin Corning; J. Victor Skiff, Legislative Advisor; Mary Lawrence, Secretary to the Committee.

Dr. W. Mason Lawrence, Assistant Commissioner for Fish and Game, called the meeting to order and introduced members of the Board and guests. The Conservation Commissioner welcomed the group and emphasized the historical sig-



Meet Dr. Harold G. Wilm,
Conservation Commissioner, State of New York

Governor Rockefeller's appointment of Dr. Harold G. Wilm, Associate Dean of the State University, College of Forestry, Syracuse, to head the State's Conservation Department has been hailed by professional people of the Department and by leading conservationists throughout the State.

Dr. Wilm brings to the post of Conservation Commissioner a lifetime of study and experience in a broad range of natural resource interests. Born in Topeka, Kansas, 51 years ago, Dr. Wilm trained in forestry at Colorado College, receiving his B.S. degree there in 1929. Transferring to Cornell University for graduate studies, he received his Master's degree in 1930 and his Ph.D in Forestry in 1932.

From 1932 to 1948 Dr. Wilm did research in watershed management in California and Colorado for the Forest Service of the U.S. Department of Agriculture. From 1948 to 1951 he was engaged in flood control surveys and river-basin planning in the South and Northwest for the Forest Service. He was National Chief of the Division of Watershed Management Research for the Forest Service in Washington, D.C., from 1951 to 1953.

Dr. Wilm became Associate Dean of the State University College of Forestry in Syracuse in 1953. As such he has been in charge of the Resource Management Division and Graduate Studies.

Commissioner Wilm, as an active member of a number of professional organizations, is well known in the conservation field—nationally and internationally. From 1953-56 he served as President of the American Geo-Physical Union, Section of Hydrology. Since 1957 he has served as President of the International Association of Scientific Hydrology. Commissioner Wilm is also a member of the American Forestry Association; National Academy of Sciences; International Union of Forest Research Organizations; Society of American Foresters and the Soil Conservation Society of America.

As Conservation Commissioner, Dr. Wilm is dedicated and eager to carry forward the comprehensive and long-range natural resource program outlined by Governor Rockefeller during the election campaign. To this end, the Commissioner will have the earnest support of all those in the Department and of forward looking conservationists throughout the State.

Fish and Wildlife Management Act Districts

Department District Representatives

1—A. G. Hall
Stamford
2—A. C. Petty
35 S. Broad St., Norwich
3—B. O. Bradley
815 State Office Bldg., Syracuse
4—U. B. Stone
2130 Scottsville Rd., Scottsville
5—R. E. Hyde
618 Exchange Nat. Bank, Olean

6—R. F. Perry
2130 Scottsville Rd., Scottsville
7—J. E. Wilson
Box 84, Theresa Rd., Watertown
8—A. S. Taormina
815 State Office Bldg., Syracuse
9—G. T. Chase
Ray Brook
10—R. G. Zilliox
Ray Brook
11—J. D. Gould
311 Mill Street, Poughkeepsie
12—W. G. Bentley
65 West Sunrise Hway., Freeport
13—Warren McKeon
311 Mill Street, Poughkeepsie

Left to right, standing: Eldredge Lasher, Dist. 13; Harrison B. Parks, Dist. 9; Richard C. Ward, Dist. 5; Alfred Morris, Dist. 10; George L. Cobb, Dist. 1; Stuart Donnan, Dist. 4; Manley Whipple, Dist. 6. Seated: Kenneth Mayhew, Dist. 7; Robert Thompson, Dist. 3; A. B. Hatch, Dist. 2; James Mathews, Dist. 11; E. L. Cheatum, Secretary to Board; John Litts, Dist. 8

nificance of this first State Board meeting in the new approach to administration of the State's fish and wildlife resources through the Fish and Wildlife Management Act. Assemblyman Lawrence, on behalf of his committee, expressed deep appreciation to the board members for their giving so unselfishly of their time in furtherance of FWMA objectives, cautioned against impatience and stressed the importance of long range and thoughtful program planning. He assured the board of the continuing interest of his Legislative Committee and proffered its advices and aid to the board whenever called upon.

This first meeting was largely an organizational one. Dr. A. B. Hatch, State Board delegate from District 2 was elected chairman; S. James Matthews, State Board delegate from District 11, vice chairman; E. L. Cheatum, secretary, and delegated by Assistant Commissioner Lawrence as his representative to the State Board. Progress reports were presented by the Department and by each of the district delegates, and resolutions from the districts dealing with establishment of landowner co-operator areas, soil bank programs and educational needs were presented and discussed. A report from the New York State Farm Bureau was presented by C. Kenneth Bullock. He read the 10-point conservation policy statement of the Farm Bureau for 1959, and the report was incorporated as an attachment to the minutes of the board meeting.

The following committees were appointed by the Board Chairman: Resolutions. S. James Mathews, Chairman, C. Kenneth Bullock, Stewart Donnan, Robert Thompson, Dr. Charles Palm; By-Laws, George Cobb, Chairman; General Planning, George Cobb, Robert Thompson, Manley Whipple.

All resolutions and statements of policy originating from the districts were referred to the Resolutions Committee for study and recommended action at the next State Board meeting to be held January 27th in Syracuse.

What of the Future?

There are some who say that the end of public access to private lands for the purpose of hunting or fishing, and without specific invitation from the landowner, is rapidly approaching. This may be so. However, there is a large segment of landowners who are hunters and fishermen, who also desire comparative freedom from restrictions when afield. They share the average landowner's natural

desire to control the use of his own land, to preserve his right to play host or not to play host to *unknown others*. They ask for the dignity of *giving permission*, and for the respect of those to whom permission is given. If simple courtesy can be achieved generally, then more time will have been assured to continue the enjoyment of public hunting and fishing opportunities upon privately-owned lands. But if courtesy cannot be assured; if the rights of private landowners cannot be guaranteed, then general closure of such lands to public hunting and fishing will progress to its inevitable end.

The scope of authority vested by law in the District and State Boards set up under the Fish and Wildlife Management Act appears adequate for attacking this problem. Solutions, however, will vary in accordance with local or district needs. The District Boards with District Department personnel are in the best position to determine what these needs are in their areas of the State and to design programs to meet them. Some are already in the process of surveying landowner problems and attitudes to provide a realistic basis for co-operative planning. The key importance of the landowner in this planning work was expressed for the Department by Commissioner Mauhs in his address to the 1958 annual convention of the New York Conservation Council, held at Utica in October. In giving a word of caution to sportsmen members of the District and of the State Boards, he said:

"In your enthusiasm, you should guard against giving the impression to your landowner associates on these boards that they must do all the giving. Rather, you should consider the reverse to be true, because if the success of your district programs to insure more public hunting and fishing opportunity in this State is dependent on any one group, I would name the private landowners as that group. They have much to give—make very certain that you give much in return."

The issue for the future by no means ends with finding satisfactory solutions to providing space for fishing and hunting opportunities for our people. There is also the necessity to maintain natural production of fish and wildlife in this space, whether it be privately- or publicly-owned land and water. This can be achieved by applying management practices *known to be useful* in maintenance of these resources, including suitable controls over their annual harvest. Their application must be carefully considered in relation to real, *not imaginary need*. At the same time, it is not sufficient to make token gestures, with a dribble of effort here and there for the sake of "demonstration effect." Rather, their application should become an accepted part of general land, water and renewable resource management whenever and wherever there is need to correct real deficiencies, or to prevent deficiencies developing. They must become a part of the habit of natural resources use.

The District Boards composed as they are of responsible public officials, having their origins in the communities they serve, offer the best hope of stimulating the application of these fish and wildlife management practices in their communities, and creating circumstances under which they are accepted as at once desirable and profitable.

The Conservation Department, working with the District Boards, becomes a partner in this "grass roots" planning and program application. It provides guidance and assistance, co-ordination of effort of men, supplies, equipment and funds. In the last analysis it must also be an arbiter in policy issues affecting the nature of District and State programs as these affect fish and wildlife for it is charged by law as ultimately responsible for the "efficient management of the fish and wildlife resources of the State." (*Sect. 175 (1) of the Fish and Game Law*). However, the exercise of this responsibility need not be arbitrary in the process of formulating and implementing sound progressive programs in the districts.

Time for Action

Although the Department is staffed with specialists in fish and wildlife resource management, it does not claim to have a monopoly on knowledge, or on the talents for getting good jobs done. The solutions to many problems, many of which involve human relations, are expected to come from thoughtful, experienced men in the District Boards, and the State Board. These men have won distinction in their own right and have given a great amount of thought to the human problems relating to wise and equitable use of our fish and wildlife resources. Their contributions, individually and collectively, will be honored and valued.

A people awakened is a people in action. There is an awakening to the need for comprehensive, long term planning and action for preservation and wiser use of our fish and wildlife resources. The District Boards will be catalysts to the awakening and the action. They are beginning to realize the magnitude of the challenge which lies before them. What they now do will affect generations to come—for they are concerned with the future of *living* renewable resources, plant and animal alike, sensitive to the works of man, and dependent on man for their place in the culture of our future.

Fish Facts

"Never handle a fish with dry hands." You've probably heard that since you were knee-high to a musky, but do you know why it's part of the fisherman's lore? Well, here's the scientific explanation:

The outer layer of skin on a fish, unlike our own hide, is made up of living cells. This is possible because fish live in water, and living cells *must* be in a liquid medium to survive.

But exposing live tissues to the world around him would make the fish easy prey to infection. So to protect himself from attack by fungus or bacteria, he exudes a coating of mucus or slime over his skin.

The slime also comes in mighty handy in other ways. It acts as a lubricant, so the fish can glide through the water without friction. And even more important, it helps to make him water-tight. Without that coating of slime, the freshwater fish would actually be in danger of becoming waterlogged. Here's why:

If you studied physics, you remember that two solutions of unequal strength, separated by a semi-permeable membrane will tend to equalize themselves. This process, you'll recall, is known as osmosis. And the weaker solution—which in this case is the fresh water—will always go into the stronger solution, which in this case is the somewhat salty solution inside the fish.

So if it weren't for their coating of mucus or slime, trout, bass and other fresh-water species would eventually have their insides flooded with water and would die. In many salt-water fish, the result would be just the opposite: Their body-liquids, a weaker solution than the seawater, would go running off to join the ocean, leaving the fish drier than a prune.

In more ways than one, then, slime is important to the fish that wants to stick around for a while. And too much handling might remove a dangerous amount of this protective covering. However, the amount of handling ordinarily required to take a fish off the hook isn't very likely to remove that much of the slime, whether your hands are wet or dry.

Far more likely to kill the fish is *rough handling!* Squeezing, especially around the gill region where the vital organs are, is probably the biggest cause of death among fish that are hooked and then thrown back in. So instead of worrying about whether your hands should be wet or dry, forget it. Just handle the fish as gently as you can.—ROSEMARY E. CLARKE, *Radio Bureau, State Commerce Department.*

The Soil Bank for '59

A Progress Report

by A. W. Bromley

The Federal government's huge agricultural support program has been redesigned to encourage long-term conservation practices at a profit for the farmer. If you are a landowner, it will pay you to check the opportunities offered under the Soil Bank for '59.

YOU don't have to be a student of agricultural economics to have heard about the Soil Bank—the current program of the Federal government's Department of Agriculture to support farm income, on the one hand, and reduce farm crop surpluses on the other. Just *what* you may have heard, however, probably varied dependent upon whether the informant was wholly on the taxpaying or partially, at least, on the receiving end of this program.

Now, we're not about to set ourselves up as an intermediary in this field of conflict among economists, sociologists, tax experts and practical politicians beyond admitting that it's about as tough a problem as any to confront us today on the domestic front. Rather, we wish to proceed from the fact of the existence of the Soil Bank as an active part of our farm picture and describe some of the benefits to conservation—and to farm owners—that can be realized under this and allied programs.

Those who read THE CONSERVATIONIST regularly will recall that we ran an article on the Soil Bank, "The Soil Bank Program in New York," a little more than a year ago, (August-September, 1957). In that story, Charles F. Baar, Superintendent, Forest Investigations for the Conservation Department's Division of Lands and Forests, described in detail how the program functioned through the Federal Agricultural Stabilization and Conservation Committee (ASC), how other Federal and state agencies are organized to assist, how landowners could sign up in the program and the benefits to be secured thereby. As the mechanics of administration and the steps a landowner should follow to become a co-operator under the Soil Bank Program have not changed since that time, we shall not repeat them here. The reader, if interested, is referred to Baar's original article (also available in reprint form upon request to N. Y. S. Conservation Department, Division of Conservation Education, Albany).

What has changed, however, is the complexion of the Soil Bank Program itself. Gone is the *Acreage Reserve*, the short-range phase which compensated landowners on a year to year basis *not* to grow such crops as wheat, corn, tobacco, rice and peanuts. Moving to the fore is the *Conservation Reserve*, the longer-term phase designed to take lands out of crop production for an extended period and to encourage, through cash payments, practices that will advance the conservation of our natural resources.

Up to the present, the Soil Bank Program, with emphasis on the short-term and now abandoned Acreage Reserve plan was most appealing to a class of farmers exemplified by the large-scale cotton planters of the South and the grain farmers of the Midwest; not so attractive to the miscellaneous crop, dairy and part-time-farmers of New York and the Northeast. Under the Conservation Reserve, however, the picture is much different.

Such progress as had been made previously in New York under the Soil Bank Program was principally through the Conservation Reserve Phase, as pointed out by Baar in his earlier article. Of the total acreage in the State signed up under the Conservation Reserve, (150,000 acres) approximatley 36,000 is scheduled to be reforested.

Tree planting will certainly continue to be a most important and popular phase of the program. Indeed, figures show a rapid increase of interest. In 1956, landowners in New York contracted under the Soil Bank Program to reforest a total of 2,566 acres; in 1957 a total of 9,898 acres. Last year (1958) the acreage sign-up for the planting agreement totaled nearly 24,000 acres, calling for some 30 million seedling trees. Moreover, it looks as though the 1959 sign-up for trees under the Conservation Reserve will come to another 20,000 acres.

But there appears, also, to be greater opportunity and interest under the program as presently directed to establish practices of direct benefit to wildlife and to throw entire farms into the Conservation Reserve. Stimulating this are payments of higher rental rates per acre on eligible crop lands plus a 10 per cent bonus payment if the landowner will place all eligible lands of his farm under the Soil Bank's Conservation Reserve. Just what the rental rate will be per acre will depend upon individual circumstances and upon farm location but it will average higher than the acre per year rates paid here in New York during 1957 and 1958.

Let's assume, now, that you, as a landowner, have worked out with your county ASC representative the cropland basis for participation in the Soil Bank Program, then decided yourself whether you will enter a part of that acreage or all in the Conservation Reserve, in qualification for the going rental payment per acre (plus the 10 per cent bonus for total conversion should you turn the whole farm over to the Soil Bank). You will then have a further choice of added advantages in the conservation practices to be established on this acreage. Many landowners (the majority, in fact) decide to maintain the land in permanent grasses or legumes, which must be clipped each year to control weeds. Others may decide to reforest these lands. As noted, this latter choice is becoming more popular with Soil Bank landowners in New York In either case, grass or trees, the Soil Bank will reimburse the landowner up to 70 per cent of the planting cost involved

But that doesn't end the choices of a course of action. Instead, the co-operator may decide to adopt one or more prac-

Reforestation is most popular Conservation Reserve practice

Farm pond construction is encouraged by the Soil Bank

This wildlife marsh was built with Soil Bank help

tices designed to be of direct value to wildlife resources — planting of grain plots annually for wildlife food; planting of shrubs of particular value for wildlife food and cover; development of water and marsh areas for wildlife and the construction of farm fish ponds. Here again the co-operating landowner will collect at the going rate per acre for croplands that these practices supplant and, in addition, will be reimbursed for 80 per cent of the planting and/or development costs involved.

It might appear, with these incentives, that conservation agencies would be overwhelmed with demands for assistance in planting shrubs for wildlife, developing wildlife marshes and growing Winter food patches. Not so, however. In fact, so little interest has been evidenced by landowners for these practices that few if any will actually find their way on to the land unless some such agency as the State Conservation Department develops a companion program to further encourage these practices by picking up the tab for the remaining 20 per cent installation cost. Perhaps if fully subsidized and sold on the indirect advantages to be gained, Soil Bank co-operators will become important focal points upon which to build a strong landowner-sportsman program.

The way toward the goal seems logically to coincide with the Conservation Department's objectives under the Fish and Wildlife Management Act program—described in this issue of THE CONSERVATIONIST by E. L. Cheatum. Certainly, in many instances these conservation programs have parallel paths; cannot fail to profit through co-ordination.

Moreover, there appears to be opportunity to expand this phase of co-operative effort through amendments to existent Soil Bank contracts of landowners already participating in the program.

To repeat our opening thesis, it is not our purpose to debate the merits of the Federal Soil Bank Program as a solution to the problem of crop surpluses or as a support for the agricultural economy. Nor are we going to predict the life expectancy of the program. The point is that the Soil Bank Program exists; that it is playing an important role in shaping the land use pattern here in New York; that the emphasis of the program is presently directed toward the conservation of our natural resources; that we are all paying for the program through taxation; that we would be downright stupid, not to direct our efforts through existent programs like the Forest Practice Act and newly developing programs like the Fish and Wildlife Management Act to take maximum advantage of the benefits of the Soil Bank as long as it shall live.

The State Parks of Central New Y

by Samuel Perry, *Assistant General Manager, Central New York Parks Commissio* and

The Central New York Region

THE Central New York Park Region stretches through the heart of the State from the Pennsylvania line on the south to the shores of Lake Ontario on the North. It includes the Counties of Oswego, Onondaga, Madison, Cortland, Chenango, Otsego and Broome. These counties, together with Oneida, a Forest Preserve County by law, but served by the parks of the Central Region, have an aggregate population of over a million people.

In 1925 when the Central New York Region was established, only 368 acres of State-owned land was in recreational use within its boundaries and annual attendance at these limited facilities was less than 50,000. Not only did this Park Commission start from "scratch," it was, moreover, faced with the task of launching a park program in a region not endowed with outstanding gifts of Nature, like the majestic grandeur of Niagara Falls or the precipitous walls and sheer cliffs of Letchworth or the Palisades of the Hudson. As a consequence, the park development in the region has stressed high recreation values, located to serve urban centers of population.

During the past 35 years, the Central New York State Parks Commission has developed and operated eight State park areas totaling 5,127 acres. Today, more than 1,250,000 people use the facilities in these parks annually.

The two major parks of the Region are close to its largest metropolitan areas. Green Lakes State Park is 10 miles east of Syracuse; Chenango Valley is 12 miles north of Binghamton and its companion communities of Johnson City, Endicott and Vestal. Both of these parks are well known for the diversity of their park facilities, appealing to all tastes in recreation.

Green Lakes State Park got its name from the unique blue-green appearance of the water attributed to high mineral content and extreme depth. The two lakes mark the sites of glacial waterfall plunge basins.

The excellent quality of its bathing coupled with its large and conveniently located picnic areas makes Green Lakes a pleasuretime favorite. Those who prefer more strenuous pastimes can enjoy its 18-hole golf course complete with clubhouse facilities. This picturesque course, with its superb view of the lakes, is regarded as one of the best and most popular public developments of its kind in upstate New York.

In the Winter, weather conditions permitting, the same golf area and facilities are used by Winter sports enthusiasts. The northern clubhouse slopes are ideal for novice skiing, sledding and tobogganing. A skating rink, adjacent to the clubhouse, rounds out a complete Winter sports program.

Since its opening as a State park, it is estimated that well over 6,300,000 people have visited and used the facilities at Green Lakes.

Chenango Valley State Park on the east bank of the Chenango River serves the southern tier section of the State. Like Green Lakes, Chenango Valley is subject to heavy day-use and offers a well rounded program of recreational facilities including bathing, picnicking, boating, fishing, camping and golf. Six separate areas provide exceptional picnicking facilities for any size group ranging from a small family to organized groups of a thousand or more. One of the largest picnic shelters in the State, accommodating 700 people, can be reserved for large group outings. The 9-hole golf course is sporty, challenging and a scenic gem.

For the historically-minded, the remains of the old Chenango Canal, completed and opened for travel in 1837 and abandoned in 1878, are still visible within the park.

Two other Central New York parks, Selkirk Shores and Gilbert Lake, although widely separated and entirely different in character and topography, are best known for their camping facilities.

Selkirk Shores State Park is one of the four major State-owned recreational areas bordering on Lake Ontario. The camping area, adjacent to the bluffs overlooking almost a mile of shoreline, has been a favorite of campers for many years. When the 140 tourist campsites and 30 cabins are occupied, the camping area resembles a small village, both in population and the extent of activity. For daily park patrons, excellent picnic facilities and lake bathing are available.

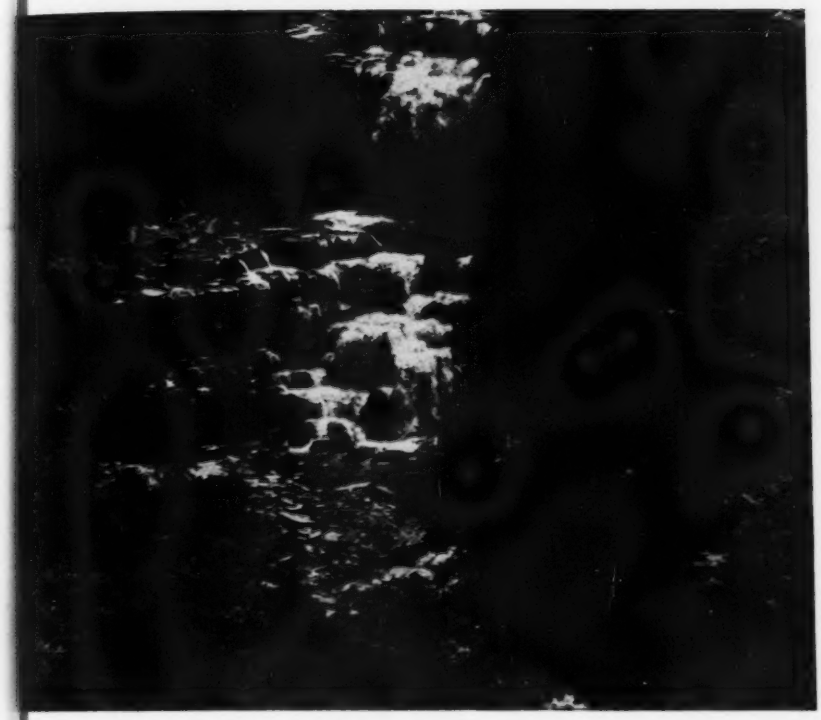
Gilbert Lake State Park, largest of all Central New York parks, with its 1,569 acres, is regarded as the "wilderness playground" of the region. Nestled high in the hills of Otsego County, north of Oneonta, the park provides a haven for those preferring a more restful and quiet atmosphere. Its flora and fauna and miles of woodland trails provide untold hours of enjoyment to thousands annually.

Center of activity is a 35-acre manmade lake providing excellent swimming, fishing and boating. The center of camping activity is a group of 33 housekeeping cabins, ideally located in a natural wooded setting.

The most recently acquired and developed park in the Central New York Region is Verona Beach State Park. Located on the east end of Oneida Lake,

York and The Thousand Islands

and Ralph G. Wallace, *General Manager, Thousand Islands State Park Commission*



Chittenango Falls near Cazenovia

it is well known for its fine sandy beach. The bathing area is popular with family groups of all ages. Even the smallest tot can enjoy the water without fear, due to the very gradual slope of the sandy lake bottom. Matching picnic facilities and parking areas make this the largest capacity day-use area in the Central New York region. On July 27th of last Summer, Verona Beach broke all records for single day attendance in the Central New York Region, when more than 14,000 people used its facilities.

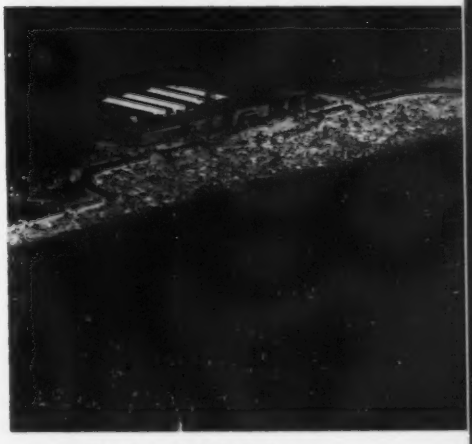
Located between the Cities of Oswego and Fulton, on the west side of the Oswego River, and overlooking historic Battle Island of the French and Indian War, is Battle Island State Park. This very popular area featuring a fine 18-hole golf course was donated to the State in 1916 by Frederick A. Emerick.

The most striking scenic features of the region belong to Clark Reservation and Chittenango Falls State parks. These smaller areas, close to Syracuse, do not have the variety of recreation provided by the larger parks, but do possess excellent and adequate picnic facilities.

The scenic waterfalls, cascading 160 feet from a limestone ledge to the bottom of the gorge, is the principal attraction at Chittenango Falls. Trout fishermen make the area headquarters for good fishing along Chittenango Creek.

At Clark Reservation, Nature has carved out a large stone crescent leaving sheer ledges of limestone up to 150 feet high. According to geologists, a majestic cataract as great as Niagara once plunged over the horseshoe-shaped cliff to the basin below.

Like other regions, Central New York is constantly striving to keep abreast with the recreational needs of its people. The growth of population, shorter work week, better roads and transportation equipment have imposed a heavy burden on present park facilities. With Central New York located at the crossroads of the new Empire Stateway and existing Thruway, an influx of tourists is expected to further increase attendance at the Central New York parks.



Verona Beach at Oneida Lake

To help cope with calculated future demands for outdoor recreation, the Central Region is hoping to add two more park areas by the year 1970. In the meantime, the principal work will involve the modernization of outmoded facilities and expansion of others necessary to create additional capacity.

Clubhouse at Green Lakes State Park, Fayetteville

Reconstruction of the bathing area and environs is presently underway at Green Lakes. Work includes the construction of a modern bathhouse with new sanitary and concession facilities, terrace development and general improvements to the bathing area. Similar work is being planned for Chenango Valley.

In order to alleviate the tremendous demand on camping facilities, future plans call for adding at least 500 more tourist campsites among the five larger parks.

The recent sharp upswing in boating activity has not been overlooked. Studies are being made regarding the possibility of establishing boat launching sites at Verona Beach and Selkirk Shores.

Thousand Islands Region

When Franklin D. Roosevelt, then Governor of the State of New York, appointed the five original members of the Thousand Islands State Park Commission in September of 1932, it was the signal for a start on the long overdue park development of one of New York's finest areas, long famous as a vacation and recreation center.

The Commission took over ten small public campsites totaling 172 acres, originally called the St. Lawrence Reservation, with the idea of ultimately developing these areas into State parks. These sites, used principally for camping and fishing, were all located in Jefferson County which represented the entire original jurisdiction of the Commission.

It was soon obvious that these tiny areas would never meet tested New York State park standards or cope with future use. The real development of the Thousand Islands region dates from the post-war program following World War II. In 1952, all of St. Lawrence County outside of the Blue Line was added to the territory of the Thousand Islands State Park Commission and the region now has more than 180 miles of shorefront extending from Henderson Harbor at the eastern end of Lake Ontario along the St. Lawrence River to the International boundary.

Westcott Beach State Park acquired in 1951 was the first large park where sufficient area and potential were available to carry out a definite park program. Today, this popular area has a beautiful picnic area with a 1,000-car parking lot, one-half mile of sand beach and 70 campsites.

Expansion continued in 1952 with the acquisition of 1,200 acres near the International Bridge for Wellesley Island State Park. Still under development, this park has a day-use area for picnicking and bathing, boat docking facilities and 200 campsites.

Cedar Point State Park, Thousand Islands

In 1954, land was acquired near the Village of Morristown for development of the first State park in St. Lawrence County. The area was named Jacques Cartier State Park after the early French discoverer who led the first party of white men to explore the area in 1534. A fine sand beach with a new bathhouse was opened to the public in 1957. A camping area providing 60 campsites and boat docking facilities is presently under construction.

The most dramatic addition to the Thousand Islands Region will be unfolded in 1959 when the new St. Lawrence State Park on Barnhart Island, developed as an added feature of the billion dollar St. Lawrence Power and Seaway Project, is turned over to the Thousand Islands State Park Commission. The large influx of tourists expected to visit this tremendous hydro-electric power development will be able to enjoy the facilities of this fully developed park of some 1,700 acres. A boat marina with harbor for small craft, a bathhouse and beach, the Barnhart overlook and picnic areas and a camping area of 150 sites at Coles Creek will be completed when the park is officially opened.

Because of this gigantic undertaking, much of the International Rapids section of the St. Lawrence River has now been

Wellesley Island State Park, St. Lawrence River

replaced by the newly-formed Lake St. Lawrence. The new lake created by the Robert Moses Power Dam and Long Sault Dam offers added recreational assets in a region already rich in natural beauty and resort activity.

Route 37, between the Iroquois Dam and Massena, affords the motorist an excellent view of the lake. In this same section, the public will be able to use newly-developed boat launching sites and the many natural boat basins.

With this additional park, the Thousand Islands Region will consist of 15 parks, totaling 4,000 acres. The new St. Lawrence State Park will be the fourth major area developed in the northern part of the State in the past eight years.

The picturesque scenery of the many islands, the clear and refreshing waters of Lake Ontario and the St. Lawrence River, together with the St. Lawrence Seaway and River Development are the main attractions in this Thousand Islands Region. Expert anglers consider the lake and river fishing for pike, muskalonge and black bass equal or better than any comparable fishing grounds anywhere.

Barnhart Island swimming beach.

The recent development of the four larger park areas and the many visitors at the St. Lawrence Power and Seaway Project has created a great demand for additional camping and boating facilities. To help remedy the situation, the Commission is continuing expansion of present park facilities so that by the Summer of 1959 the region will provide for more than 800 campsites, additional picnic areas and extra docking facilities.

We hope, this year, you will visit the "North Country" of our State. You will be amazed at the scope and progress of development of our natural resources.

History of the Microscope

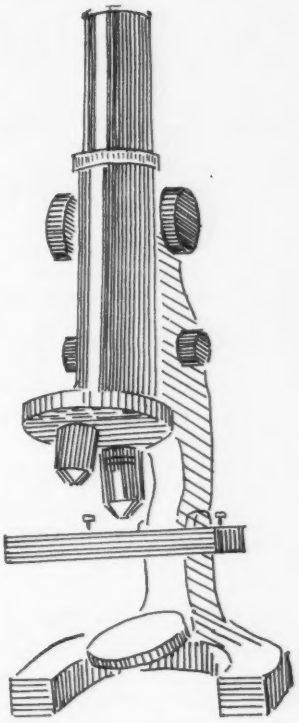
During that historic period known as the Renaissance, after the "dark" Middle Ages, there occurred the inventions of printing, gunpowder and the mariner's compass, followed by the discovery of America. Equally remarkable was the invention of the microscope; an instrument that enables the human eye, by means of a lens or combination of lenses, to observe enlarged images of tiny objects. It made visible the fascinating details of worlds within worlds.

Long before, in the hazy unrecorded past, someone picked up a piece of transparent crystal thicker in the middle than at the edges, looked through it and discovered that it made things look larger. Someone also found that such a crystal would focus the sun's rays and set fire to a piece of parchment or cloth. Magnifiers and "burning glasses" are mentioned in the writings of Seneca and Pliny the Elder, Roman philosophers during the First Century A.D., but apparently they were not used much until the invention of spectacles, toward the end of the 13th Century. They were named lenses because they are shaped like the seeds of a lentil.

The earliest simple microscope was merely a tube with a plate for the object at one end and, at the other, a lens which gave a magnification less then ten diameters—ten times the actual size. These excited general wonder when used to view fleas or tiny creeping things and so were dubbed "flea glasses."

About 1590, two Dutch spectacle-makers, Zaccharias Janssen and his son, Hans, while experimenting with *several* lenses in a tube, discovered that nearby objects appeared greatly enlarged. That was the forerunner of the compound microscope and of the telescope. In 1609, Galileo, father of modern physics and astronomy, heard of these early experiments, worked out the principles of lenses and made a much better instrument by adding a focusing device.

The father of microscopy, Anthony Leeuwenhoek, of Holland (1632-1723), started as an apprentice in a dry goods store where magnifying glasses were used to count the threads in cloth. He taught himself new methods for grinding and polishing tiny lenses of great curvature which gave magnifications up to 270 diameters, the finest known at that time. These led to the building of his microscopes and the biological discoveries for which he is famous. He was the first to see and describe bacteria, yeast plants, the teeming life in a drop of water, and the circulation of blood corpuscles in capillaries. During a long life he used his



lenses to make pioneer studies on an extraordinary variety of things, both living and non-living, and reported his findings in more than a hundred letters to the Royal Society of England and the French Academy.

Few major improvements were made until the middle of the 19th Century. Then several European countries began to manufacture fine optical equipment but none finer than the marvelous microscopes built by the American, Charles A. Spencer, and the industry he founded. Present day instruments, changed but little, give magnifications up to 1,250 diameters with ordinary light and up to 5,000 with blue light.

As late as the '70's and '80's, only a few doctors and college professors owned a microscope. Today they are an essential tool in every high school, college, hospital and research laboratory. To meet the special needs of scientists and industries, startling variations have been devised, the electron microscope, the X-ray microscope and several others, which enable man to view or photograph matter of molecular and even atomic dimensions.

A hand lens will reveal fascinating new worlds to a youngster.—From *Nature Bulletin*, Forest Preserve District, Cook County, Illinois

Predation, Depradation or Competition

by Maurice M. Alexander,

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PREDATION is a term commonly used to indicate what many people believe to be the misplaced appetites of some of our wild animals. The question arises as to whether these appetites *are* misplaced and if so, why? Finally, what can be done to reduce this conflict between the interests of man and the feeding activities of certain animals? It will help in answering these questions to consider how the situation looks from the animals' point of view—and from man's.

As the Animal Sees It

Every living creature must eat—this is a physiological necessity. Furthermore, every living creature has its position or purpose in life—this we might call an ecological necessity. The physiological need for food is an internal force that has controlling influence over the ecological position or purpose of an animal in his environment. And, since animal communities are the sum of all the different animals living in an area, the competition for food becomes one of the basic factors shaping the characteristics of our living communities.

Food, one might say, is a "package" that comes in two wrappings—how much and what kind. Some animals are more finicky than others in the kinds of food taken; others aren't so particular so long as there's plenty of it. These dietary traits determine the kind of animal community within which a species can survive. Thus, the more generalized a species with respect to its feeding habits the more common it becomes in a greater variety of places.

To summarize the animals' viewpoint, it can be stated that animals feed on whatever is available in the proper place, time, and amount that is in keeping with their basic tolerance and needs in life.

As Man Sees It

Most men must earn a living—this is an economic necessity. Likewise, every man should have additional interests such as hobbies or outdoor recreation—this is a psychological or sociological necessity, and keeps Jack from being a dull boy. Many people find that their efforts to earn a living or to pursue their hobbies involve them in some way with the land, and it is on this land that animal communities are existing. Right off, you can see there's room for conflict of interests. Whatever man does affects the animal communities and whatever the animals do affects man. In a sense, man forces himself into the existing natural communities and tries to become a dominant member. The wild animals respond accordingly and sometimes resist man or interfere with his activities.

To summarize man's viewpoint, it can be stated that man selects his means of securing a living and recreation from the land and expects all other things to support his interests or exist in harmony.

Meeting Place Between Man and Animals

Unfortunately animals cannot communicate with man and therefore probably do not understand his actions. Furthermore, even if they did understand, the animals undoubtedly would object or refuse to co-operate, for even animals appear to "dislike" a dictatorship. Man becomes a competitor of the animals for some of their acceptable food items, and competition with a potential dictator usually leads to trouble.

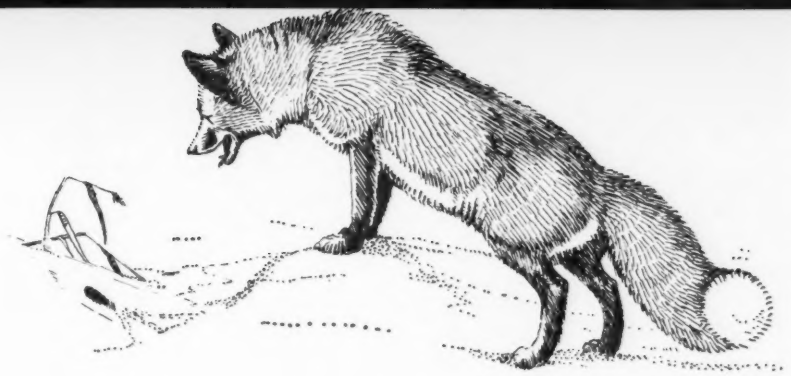
From what has been said so far, it seems quite clear that the location of the predation problem is the common ground where man meets the animals. The deeper man attempts to move into their natural community, the greater the possibility of problems arising. This zone of overlapping interests where competition results between man and animals can be understood best by first understanding the animal communities. It is assumed that the human community is understood sufficiently. [*Ed. note: Quite an assumption!*]

Workings of an Animal Community

Natural communities are complex associations of plants and animals living together in a common environment. In a natural community the animal populations tend to reach a state of dynamic equilibrium, sometimes mistakenly referred to as the "balance of nature." Actually, no community is entirely stable and no two communities are exactly alike —due to differences in time, place and rate of change.

The character of any given community is the result of many forces. A change of any one factor affects all other factors and, thus, the whole animal community. It is like an amoeba, constantly changing its appearance as it finds it can move in one direction but in order to do so must retract from another. The constant adjustment of an animal community can be likened also to an object suspended by many springs within a hollow sphere. An increase in the pull on one spring results in changes in the forces on all the other springs. As a result of constant changes that are taking place in the several forces or "springs," the object in the center of the sphere (representing the community) is in constant movement or adjustment.

The forces that make the animal community what it is include the animals themselves. All of them must eat. Some are strict vegetarians, others are strict flesh eaters and still others eat all types of food. For a successful community, both plants and animals must be present. The plant feeders are essential because they are the organisms occupying the necessary position of transforming plant food to animal tissue and making it available, thereby, for the flesh-eating animals. They are the primary consumers and vary from our smallest animals to the largest. Any of this group can do damage to man that in every sense is similar to predation. Actually, such an activity or feeding habit is referred to as *depredation*. For example, mice, if overabundant, injure trees, grass and cultivated crops. The same is true for other plant-eating animals. Feeding on a farmer's corn is essentially no different from feeding on his poultry. The plant eaters are fulfilling their physiological needs for food to



sustain life and are utilizing that which is most available to them and within their limits of acceptance. It is no concern of theirs whether the plants being eaten are classified by man as weeds or cash crop.

In this same community these plant eaters are being fed upon in turn by the flesh-eating animals. The killing of one animal by another for the purpose of obtaining food is rightly called *predation.* A large number of our common wildlife species fall into this group, including those that feed on insects, worms, fish, frogs, birds and mammals. As an example, mice are food for foxes, hawks, owls and snakes. The flesh eaters then, are doing man a great and an essential service in reducing the population of the plant depredators. This is good but unfortunately goes unnoticed unless the animal eaten is something man values highly, such as a rabbit or pheasant. It is only then that most people refer to the flesh eater as a predator, then it comes like a jury's decision loaded with dishonor and disgrace.

Man's Evaluation

The use of the term predator is dependent on man's scale of values which varies from person to person and with time. The mink-muskrat relationship is one example. The muskrat is part of the normal diet of the mink. The trapper's opinion of this act of predation depends upon the year-to-year balance of prices that the respective furs will bring on the market. If muskrat pelts aren't bringing a fair price, then the trapper is not too disturbed if the valuable mink makes off with a few. But if 'rats are bringing top prices, then the mink's valuable pelt can not save him from the muskrat trapper's wrath. One of the most controversial predators that we have is the fox. He is praised by the fox hunter and the naturalist; cursed by the poultryman and the upland game hunter. And the fox has no choice in the matter; he proceeds according to his lot in the ecological scheme of things. To the fox, all of its food items may be of the same value. However, to man their values are different and seldom stable. This is where viewpoints collide. In the end, the damage done by the predator depends on the value man places on the animal's food items, how abundant the predator is and how much it eats.

Quality and Quantity of Populations

The animal community is made up of many different species, each with its feeding habits and population levels, adjusting each other. Animals reproduce at rates that produce surpluses. These surpluses are partially controlled by the

flesh eaters (predators) that are larger in size, and their surpluses in turn controlled by the still larger carnivores. In the animal world the prospect for a long life is very poor because the surpluses have to be controlled by some means in order to maintain the community. It is when man steps into the picture and wants all of the surpluses for himself that trouble begins. It can become complicated. The fox might be killing the farmer's chickens and so the fox is greatly reduced in numbers in the wild community. But foxes at the same time were doing much to control the small mammals. With the evil chicken-eating foxes gone, the mice increase, do damage to the farmer's trees, grains and stored feeds until the hawks and owls (pretty good predators in their own right) take advantage of this new supply of rodents as food. Then the population of hawks and owls increase and in addition to feeding on the mice, they take a few of the farmer's chickens. It might be asked if the farmer gained in killing the foxes. Well, that's the chance he takes; it's all part of the normal dynamics of a natural community. It should be kept in mind, too,

that fox predation on chickens may be the action of an individual or family. This is true in most cases and so does not warrant the removal of all foxes. The guilty party can be caught and further control may not be necessary. This could be stated for many of our predators because only a few overcome an acquired fear of man and visit his immediate areas.

Another predator often misrepresented due to lack of understanding is the snapping turtle. Being a seclusive animal, its feeding activities are seldom noticed. Those that are seen are the most damaging. One of the principal foods of the "snapper" is aquatic plants, but no one sees them eaten. The duckling taken from the water's surface, however, is seen. Even its ability to catch fish is greatly overrated. In the snapping turtle we have another example of man's evaluation. When the reptile lives where game such as waterfowl rear their young in abundance, control is needed. Control is also necessary in fish hatcheries. However, in most places its presence should cause no alarm.

In Summary

In answering the original questions it can be said that the appetites of predators are not really misplaced; they simply suffer from man's evaluation of the species eaten. Any misplacement that may exist is the result of increased opportunity for predation through increased production by man of food items acceptable and available to the predator. In respect to these food items, the predator then becomes a *competitor* to man. As one writer has put it: "A predator is any creature that has beaten you to another creature you wanted for yourself."

What we can do to moderate the problem depends on how well we understand the workings of the animal communities and the changes man has brought about by favoring certain crops, livestock, and game species. A philosophy of predation is necessary. It is somewhat like a disease or disability in that it requires an understanding and a determination to live with it. The needs of the animals should be recognized and given consideration in the over-all program of management. Use them whenever possible to help in the management of other species through population control; species that might become serious depredators of plants if predators, their natural enemies were removed from the community. We should strive to manage our land and animals to minimize the contact between the predators and the particular species of their prey that we hold in high value—be willing to give nominal protection and accept nominal losses—be a good competitor but not a harassed dictator.

Winterkill

What Happens in t to Kill Fish i

by U. B. Stone, *District Fisheries Mgr.*

THE Winter of 1957-58 in New York was a rugged one. Perhaps the only ones who really enjoyed it were the children; they had never seen so much snow for sliding, snowball fights and all such fun and frolic. But it wasn't fun and frolic for people like driveway shovellers or snowplow operators, nor for animals such as deer in search of food or in floundering flight from ravaging packs of dogs.

There was tragedy going on, too, in the world of fish, blanketed from the human eye by ice and snow. A killer was on the loose and come Spring, with the break-up of ice-clad ponds and marshes, dead fish were widely in evidence. These fish died of asphyxiation, locked beneath the surface, a curtain of snow-topped ice effectively shutting out the life-giving rays of the sun. In short, these fish succumbed to a lethal combination of factors commonly known as *winterkill*.

Let's see what goes on in a body of water, biologically and chemically, that can add up during a severe Winter to a fish loss of serious proportions.

When water is completely saturated with dissolved oxygen the amount present is very small—only about 7 to 15 parts per million by weight, depending upon temperature. New York State waters average about 7 to 8 p.p.m. during the Summer and approximately 11 to 12 p.p.m. in the wintertime.

The oxygen requirements of fish is a variable thing too; some species need more than others; the need changes with differences in water temperature and with the different conditions under which fish live. In general it may be said that at least 5 p.p.m. of oxygen are necessary for trout and 4 p.p.m. for warm-water game fish. For short periods fish will tolerate much lower oxygen levels than these. Certain species such as bullheads may survive at oxygen levels that would be lethal for game fish. Many fishermen, who have arrived home with a mess of bullheads and found them about as lively as when they were caught, can vouch for this.

Water obtains its supply of dissolved oxygen from two sources: (1) By absorption from the air and (2) from aquatic plants as a by-product of the life process known as photosynthesis. There are also factors which are responsible for

in the Black, Ice-Chilled Depths sh in Wholesale Numbers?

the depletion of the oxygen supply. Fish and other aquatic animals use oxygen from the water but the amount that they consume is small and of minor importance. Algae and rooted plants also use oxygen in respiration but the amount that they use is normally much less than that which they produce. In very fertile waters which have a large production of algae or rooted plants, the amount of oxygen used by the plants may contribute appreciably toward depletion. However, the principal factor responsible for oxygen depletion is bacterial decomposition of organic material (the remains of animals and plants). Such material is present in the waters of all lakes and ponds in varying amounts. Oxygen is consumed in the processes of decay and putrefaction of these animal and plant substances. One example can be seen for carbon which is found in all organic matter. This is changed during the process of decay into carbon dioxide and oxygen is used in the process.

Essentially, the factors which influence winterkill are those that effect the oxygen reserve of a body of water or its replenishment on the one hand and those which are responsible for depletion of the supply on the other hand. Shallow bodies of water, less than six feet in depth, have relatively little oxygen reserve and consequently are more subject to winterkill than deeper waters. Under cover of ice, contact with the air is not an available source to replenish the supply. Thus aquatic plants, both the rooted plants and the free floating algae, are the only means at hand to increase the oxygen supply in a pond or lake covered by ice, with the exception of run-off water or the water of tributary streams that may enter. Now, plants growing in the light of day are pretty effective oxygen generators but they can carry on photosynthesis and thereby contribute oxygen to the water only when sunlight is present. Thus it follows that more oxygen will be produced on a sunny day than on a cloudy day. This is where the villian, a heavy snow, can enter the picture. A blanket of snow may completely shut out the sunlight so that the plants yield no oxygen at all. The thickness of the ice, the amount of snow cover, and the length of time the ice persists all have a bearing on the occurence of winterkill.

A striking example of winterkill was seen last Winter at Sterling Pond, Ontario County, where practically a complete kill of largemouth bass occued (*see photo*). In addition to bass, the mortality included yellow perch, bullheads, sunfish, suckers and golden shiners. A check of the pond last Summer failed to turn up any bass, but some bullheads, sunfish, golden shiners and top minnows were present. These findings are characteristic of most winterkills of fish where the game fish may suffer a complete loss while the more resistant species, particularly bullheads, survive. Sterling Pond has an area of about 64 acres, a maximum depth of six feet and a luxuriant growth of aquatic plants which cover nearly the entire pond. Although winterkill has occurred in this pond in past years there had been an interval of nearly ten years since the last kill. It is believed that a low water level and a heavy blanket of snow were the principal contributing factors to the recent winterkill. (An interesting sidelight disclosed by the Sterling Pond kill is the fact that despite a very heavy fishing pressure, a sizeable population of adult bass had successfully eluded the fishermen.)

The question may be asked: What steps can be taken to prevent winterkill of fish? In certain waters where the tendency toward this type of mortality exists, it may be practical to undertake emergency measures. Snow removal is probably the best method to use if the ice is clear enough to permit sunlight to get through. Some success has also been obtained by cutting holes in the ice and aerating the water with outboard motors. The use of an air compressor to force air through a hose that has been perforated with small holes is another technique that may be used.

If one is contemplating the construction of a pond in which to carry fish through the Winter the choice of a proper site in addition to correct design is necessary to safeguard against winterkill. For a pond fed by surface run-off or one depending upon a small stream for a water supply, the depth of the pond should be at least six feet over one-third of the area. For dug out ponds which receive little run-off it would be advisable to obtain a depth of about 10 feet.

Many of the wildlife marsh ponds are not suitable for fish management because the water is too shallow and winterkill is most certain to occur *(see photo)*. *In* addition these ponds are often built where they flood marsh, brush and standing trees and in such situations one frequently runs into trouble in attempting to manage them for fish.

Cedar Lakes Ranger Station

by M. C. Fisk,
District Forester

THERE are several Ranger stations maintained by the Conservation Department in the remote regions of the Adirondacks. They are located at West Canada Lakes, Cedar Lakes, Cold River, Duck Hole, Marcy Dam, and Johns Brook Lodge, and are operated by the Bureaus of Camps and Trails and of Forest Fire Control.

One of the more frequently visited of these remote stations is at Cedar Lakes. During the 1957 season there were 915 visitors who registered and many more who passed through but who did not sign in. Cedar Lakes is located in Township 3 of the Totten and Crossfield Purchase in the Town of Arietta, Hamilton County. It can be reached by air or via foot trails; one trail entering from Perkins Clearing, a distance of about eight miles, and another from Cedar River Headquarters, also a distance of about eight miles, four miles of which may be made by boat when the Cedar River Flow is full. After the Flow is drawn down in August, boat travel is impossible.

Cedar Lakes is located on lands which were purchased from the Union Bag and Paper Company about 1920. When they finished their logging operations, they left the old camp office, root cellar and well. This old office building was used for many years as headquarters for the Ranger, but during 1947 a new and modern log cabin was erected by the Department, with Ranger Halsey Page in charge of the construction. Logs used in the building were skidded three miles, with the rest of the materials flown in by the "Goose," then the Department's big amphibian 'plane, from Moffitt Beach. The "Goose" with Fred McLane piloting, made the round trip in 45 minutes and hauled as much as 25 bags of cement and 1,000 ft. of shiplap in a single trip. After the cabin was completed, there were enough materials left to build a tool house and storeroom.

Since May 27, 1951, the Ranger has been Robert ("Bob") Barton from Indian Lake. This courteous, congenial Ranger has made a host of friends among the sportsmen and hikers who have visited Cedar Lakes. After school is out each year, he is joined by his wife and daughter who spend the Summer with him at the cabin.

A Ranger's duties in these remote areas are varied. Cedar Lakes is on a telephone line from Speculator to West Canada Lakes. Each morning they call Ranger Page at Speculator to test the line. If the line is out of order, the Ranger at West Canada starts walking the line to Cedar Lakes, and the Ranger at Cedar Lakes starts for the junction of the line from Pillsbury Mountain fire tower. The Observer there starts over his line and the Ranger at Speculator starts from his end of the line; all hands looking for the trouble. With all four of them checking the line, and with test blocks conveniently located, it is only a matter of a few hours before the trouble is found and corrected.

Forest fire control is one of the most important jobs of these Rangers. Stored at both Cedar Lakes and West Canada Lakes are enough fire fighting tools to equip 50 men. These include hand tools, back pumps, and portable pumpers. There are blankets and bunks in the cabin to sleep the off duty crews. Additional equipment, cooking outfits and blankets to equip 200 men are stored in an emergency cache at the district storehouse in Northville. The Rangers are also equipped with walkie-talkie radio units, with which they maintain radio contact with Pillsbury Mountain fire tower, whenever they are away from camp. Regularly appointed times are set for each to contact the fire tower and the tower arranges with other nearby towers to maintain radio silence while this contact is made.

Construction materials and furnishings were flown in—1947

Foot trails into the area are kept clear and free from obstacles. All of them are cleared by Memorial Day and the trails are mowed by July 4th and again later in the season if new growth warrants it. The trails are kept well marked and all directional signs repaired. West Canada and Cedar lakes are on the Northville-Lake Placid Trail, which is marked with blue metal trail markers. The trail from Cedar Lakes to Perkins Clearing is marked yellow and the trail which branches off from this, near the top of the mountain and runs to West Canada Lakes, is marked red.

A perennial chore for the Rangers is replacement of these distinctive metal trail markers, removed by hikers for souvenirs. This is a practice definitely not favored by the Rangers and certainly of disservice to those who follow the trail later. There was one "hiker" a few years back who proved particularly difficult hanging around between West Canada Lakes and Spruce Lake. Turned out this "hiker" was a bear—and a bear with a penchant for (or a great dislike—we never learned for sure) the blue trail markers. These he tore off the trailside trees regularly, but never bothered the red or the yellow markers in the same area.

The lean-tos along the trails, available for overnight shelter in each area, are regularly inspected and cleaned up. Years ago, boughs were kept in the lean-tos, but now most of the sportsmen and hikers carry inflatable rubber mattresses, and this has eliminated a lot of work for the Ranger. If you are ever talking with one of these Rangers, ask him in what condition some of the people leave these lean-tos and they will tell you stories that are hard to believe. It is indeed fortunate that the percentage of such people is very small, but it is invariable that another hiker or sportsman gets to the lean-to before the Ranger does and the Ranger is blamed for the condition.

Wood for cooking and feeding the hungry fireplaces, which are the only source of heat in the early Spring and late Fall, is getting to be a problem. The dead and down wood within easy carrying distance of the cabins was all cleaned up years ago, and now they have to get it close to the shores of the lakes and tow it by boat, to their boat-landing and then cut it up to the required sizes.

Refrigeration is a problem at all of the cabins. At Cedar Lakes, Bob had an old gasoline refrigerator flown in, but it is on its last legs and won't last too much longer. At West Canada Lakes, Jim Lawrence has an ice house which he fills each Winter with snow and treads it down with snow shoes to compact it. It is a long trip on snowshoes, sixteen miles each way, to fill an ice house with real ice.

At Cedar Lakes there is a gas cook stove and tubes of cooking gas are flown in by the different 'planes which visit there. It is expected that one will be available for West Canada Lakes in the very near future.

All supplies have to be carried or flown in to the cabins. During a dry fire season, supplies are brought in early in the morning by a Ranger on the outside. Ordinarily when the Ranger comes out on his day off, he takes back enough supplies to last him another week. During the dry fire seasons, however, they stay in for several weeks. Most of the pilots call these Rangers before they fly in and ask if there are any supplies they can bring in for them. Fresh meat is always welcome, as most of the food is in cans, or is ham or bacon which won't spoil easily. Many of the sportsmen leave their left-over supplies with the Ranger.

Each Fall during the hunting season, there are always several hunters who get lost. The Rangers always organize a searching party, made up of members of the lost party's group and all other hunters in the area. Every effort is made to find the lost person the night he is lost. It is easier to find him the first night, as he is generally fairly close by and hasn't had a chance yet to get panicky and travel long distances in the wrong direction. If you are going in these areas for the first time, make certain you have a compass and topographical sheet. Contact the Ranger when you get in and orient yourself to the surroundings—pick out some landmarks and reference points—but please do your best not to get lost.

The West Canada and Cedar Lakes areas are within the area which was hit very hard by the blow-down of November 25, 1950. Because of the long distances from good roads there were no salvage operations carried on in these sections. The blow-down fire hazard will exist for several more years, but there will always be the increased difficulty in travel because of tangled mazes of stems on the ground. Most of the sportsmen are alert to the grave danger of fire and are very careful, particularly in this area. However, just one careless act can start a fire which under favorable burning conditions will reach tremendous size before sufficient men and equipment can be brought in to bring it under control. There have been a few fires since the blow-down, but miraculously they have been confined to small areas of an acre or less. One of the big dangers is the ever-present threat of lightning strikes on the higher elevations. A fire started in this manner may smoulder for several days before giving off enough smoke to be detected by the fire towers.

Bird Language

Birds of a feather may flock together, but not if they don't speak the same "language," say scientists in the New York State College of Agriculture at Cornell.

The discovery was made recently with an audiospectrograph—a machine that's "about as complicated as two radio stations," according to ornithology Prof. Peter Paul Kellogg. By turning sounds into writing, it's helping ornithologists break the bird song sound barrier.

Most bird songs are less than two seconds long, Kellogg said. In the audiospectrograph, the same song is played hundreds of times over, while progressively higher frequencies are filtered through. Each time, a pen records the sound on a roll of sensitive paper. The finished picture, called an audiospectrogram, represents the entire bird song in writing.

Developed during World War II and used secretly to analyze sounds, the audiospectrograph shows the voice range of a bird, each note it sings, and the selection, placing, and emphasis of overtones.

At Cornell's laboratory of ornithology, the device has shown that birds which look identical, yet never interbreed, tell each other apart entirely by vocal means. Ornithologists had long wondered why two groups of alder flycatchers that seemed the same still kept their distance. Audiospectrograms recently revealed marked differences in their songs.

Audiospectrograms have also proved conclusively that a bird may sing several notes at the same time. The woodthrush, for example, sings three notes simultaneously, forming a harmonious musical chord.

Other relationships between birds have been brought to light: A study of crows in the United States shows some species are more alike in language than others. This evidence is helping trace origins and evolution of the birds—which came first, and which descended from them.

Aiding the deaf was one of the purposes for developing the audiospectrograph. If a totally deaf person learned to "read" sound on an audiospectrogram, and a portable machine were devised, he could understand the speech of others by recording and reading it as they spoke.

Conifer Plantations and Wildlife

by Robert Leo Smith, *Assistant Professor, Wildlife Management, West Virginia University*

This is the first of two articles on coniferous plantations as wildlife habitat. Part I describes the varying attractiveness of plantations for wildlife with respect to species of trees planted, age of trees, size of plantation and various other factors of growth. Part II, to appear in the April-May issue, will discuss various plantation management techniques that influence wildlife use.—Editor

PART I

ANYONE who drives through New York State must be impressed by the number of conifer plantations he sees. Most of these plantations are growing on part of New York's 5 million acres of submarginal land, abandoned by agriculture; many were planted years ago by the CCC under the State Reforestation Program. Extensive additional acreages have been planted by individual landowners in co-operation with the State under the Forest Practice Act. Tree planting on abandoned land has kept pace to the present on both State and private holdings. Within the past 10 years the P-R. 48-D Program alone has accounted for the planting of well over 50 million trees on private lands.

What does all this mean for wildlife? Many sportsmen viewed with alarm all the plantations growing on New York's abandoned hills. They felt these would create thousands of acres of "wildlife deserts." To find out whether these fears were justified and to determine just how valuable conifer plantations of various species, areas and heights are to wildlife, a study was undertaken at the Department of Conservation, Cornell University. This study, carried out by the author under the direction of O. H. Hewitt, Professor of Wildlife Management, was conducted in co-operation with the New York State Conservation Department as a P-R, Federal Aid Project. Most of the plantations studied were in the southern New York where the greatest land abandonment and subsequent coniferous planting occurred.

There are all kinds of conifer plantations in New York State and they range from one to several hundred acres in size. They are of different ages, in different growing conditions and subject to varying management practices. There are plantations of red, white, jack and Scotch pine, larch, Douglas fir, balsam fir and white cedar. Some, it is true, qualify as "wildlife deserts," but others have developed into respectable wildlife habitats.

When abandoned land is planted to trees, the natural succession of vegetation from grass to shrubs to forest is by-passed. In its place a rapidly developing coniferous woodland is established. As the stand matures, certain species of wildlife appear only to be succeeded by others as the plantation increases in height.

The young plantation struggling up through the grass and brambles has little effect on the cottontails and ring-necked pheasants, the meadowlarks and vesper sparrows already living in the field. But when the conifers have grown to four feet and over in height, the field takes on the character of a thicket. Pheasants no longer look upon such cover, if extensive, as a happy home, but conditions are fine for the cottontail; and shortly, song, field and chipping sparrows appear.

When the pines and spruces are 10 to 15 feet tall, the plantation is much like an overgrown field but with considerably better cover. There are still plenty of islands of herbaceous ground cover and the living branches of the trees are close to the ground. The cottontail couldn't ask for a better home. He is soon joined by the towhee, robin and purple finch. Some ruffed grouse appear while field and song sparrows are confined to the edges of the planting.

By time the plantation has grown to 20 to 25 feet tall, significant changes have taken place. The crowns have closed shutting out the light and the lower limbs have died. The traces of old field plants beneath the trees are nearly gone. Openings, however, are created by blow-downs, storms, insect damage and failure of trees to survive. Thus, a variety of cover conditions—part field, part forest—exists. It is at this stage of development that the plantation contains its greatest variety of wildlife. Rabbits and ruffed grouse occupy the edges and the openings in Summer and seek the dense cover in Winter. White-tailed deer retreat to plantations for Winter protection and hide their fawns there in Summer. The gray fox and the red squirrel appear. Towhees nest in the openings and sing from the tops of the conifers. The purple finch, mourning dove, the robin and the veery, the black-throated green, the myrtle, Nashville, magnolia and chestnut-sided warblers add song and color. Where sufficient ground cover exists or blow-down occurs, the slate colored junco is at home.

This peak of attractiveness as game habitat gradually wanes as the plantation matures. More and more lower limbs and undercover disappear. Rabbits now use the area only for travel lanes. The gray fox and the red squirrel, the white-footed mouse and the deer are the principal mammalian inhabitants. The birds of the thicket along with the veery and the junco are gone. Only the birds of the tree-top, the black-throated green warbler and the blue jay, remain. Now for the first time the Blackburnian warbler, characteristic of older conifer growth, appears. Conspicuously few or absent, except in Winter, are the chickadees and woodpeckers, since no suitable nesting sites occur.

Within the framework of changing

A red pine plantation at 20-foot stage

wildlife populations as the conifers mature, a number of other conditions finally determine what kinds of wildlife and how many will occupy a plantation.

Each plantation is individualistic; it has its own peculiarities and is attractive to wildlife in varying degree. One of these factors is the kind of conifers making up the plantation.

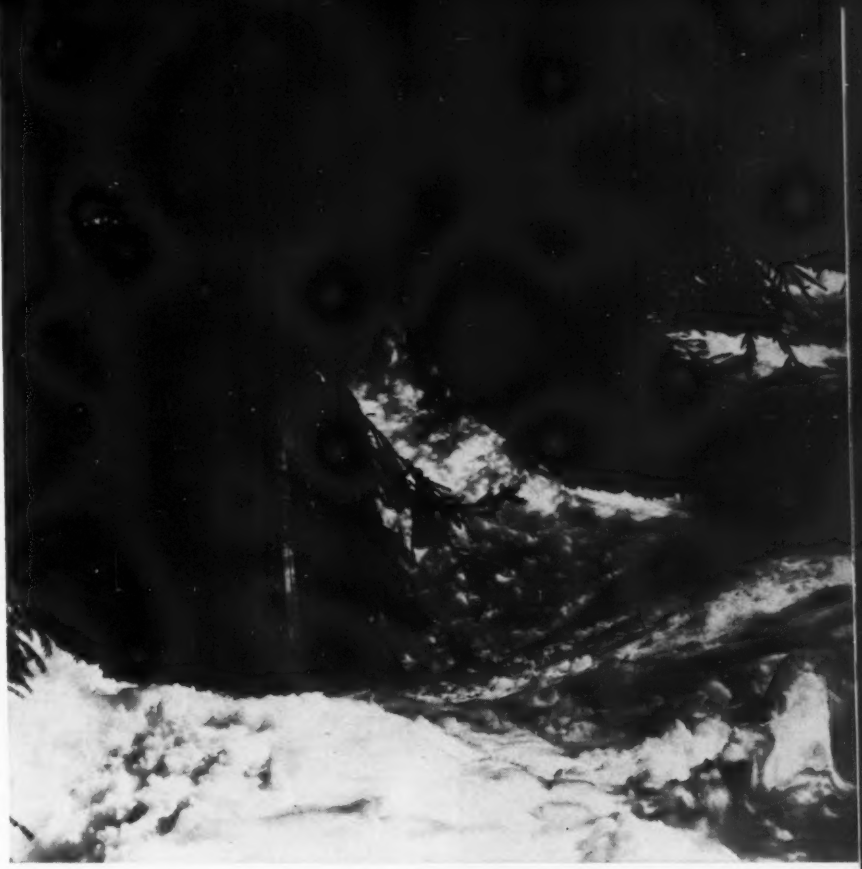
The conifers as used in reforestation work may be divided into three broad groups with respect to growth form and general growth behavior: First there are the pines with straight, cylindrical trunks, whorled, spreading branches and a crown whose density varies with the species. Then there are the spruce-like trees, including the spruces and firs with more or less tall, pyramidal crowns and straight tapering trunks. Finally there are the larches with tall pyramidal open crowns, slender, horizontal branches and deciduous needles. These group characterstics exert considerable influence on the wildlife use of a plantation, especially when it is beyond 12 feet in height.

Red and Scotch pine over 20 feet in height provide the white-tailed deer with ideal Winter cover. Often the snow is only a third of the depth outside. If the plantation is wide enough, the force of the wind is considerably reduced. On stormy Winter days the deer in the study areas retreated to the depths of pine plantations. In fact they preferred the pines to the hardwood-hemlock forests for bedding. Scotch pine furnished food for deer. In several areas in south-central New York, white-tailed deer fed on the terminal whorls of the tops of Scotch pine, broken down by ice and heavy snow. They actually preferred this to near-by white cedar.

Jack pine, on the other hand, intercepted little snow. Since the depth of snow inside the plantation was nearly the same as surrounding open hardwood forests, deer and ruffed grouse avoided jack pine in midwinter. Where jack, Scotch and red pine were adjacent to one another, the ruffed grouse wintered in the Scotch and red pine.

Pine plantations 6 to 15 feet tall were the most popular with cottontails in Winter. Plantations over 15 feet tall lost their attractiveness as rabbit habitat but were still used, chiefly as travel lanes, from one briar patch to another. Old plantations provided living quarters for cottontails if they had a few abandoned woodchuck burrows. These the rabbits used, even if they had to leave the plantation to find food.

During the Summer the more mature pine plantations still held some wildlife. Deer trails and fresh pellets were common in all pine plantations studied, especially in jack pine. Abandoned in Winter, jack pine plantings became centers of deer and ruffed grouse Summer activity on State reforestation areas. This probably was due to the heavy undergrowth, stimulated by the light that filtered through the crowns. The ruffed grouse also occupied other pine planting in Summer, where they hid their nests in grassy and shrubby openings.



Note tentlike shelters formed by snow-pinned spruce branches

Spruce plantations provide wildlife habitat quite different from pine plantations. In Winter the lower horizontal branches of the spruce may be buried under three to four feet of snow. Thus, tent-like conditions exist beneath the trees while deep drifts of snow accumulate between the rows. These pockets beneath the spruce make cozy retreats for the cottontail in Winter. In our studies, we found that there were always more bunnies in a spruce planting than in pine. Where spruce grew close to the pine, the rabbits used the pines only for travel lanes. The grouse, too, found these tent-like pockets made good Winter cover. All during the Winter, well beaten grouse trails lead underneath the spruce. When grouse had access to different conifers within a relatively small area, spruce plantings and plantings containing spruce were used most frequently.

Deer avoided most spruce plantings in Winter. Perhaps they have enough problems in Winter without trying to stumble through the snow between the rows. Only after the spruce has reached a height of 35 or 40 feet will the deer find real protection. But as quickly as the snow melted in the spring the deer came back to the spruce and used them throughout the Summer. Possibly they found the low branches made good fly brushes as well as highly concealing cover.

Rabbits, grouse and mice travel plantation edge

Summertime found the grouse in spruce and mixed spruce-pine plantings. Here they frequented the openings and areas of poor tree survival where they built their nests and reared their broods.

Birdlife in spruce plantings was more

Small plantation where woods and field join—an ideal arrangement

Winter home for wildlife

varied and more abundant than in the pines, since there was a greater variety of nesting and cover sites. The densest cover was close to the ground instead of high up in the crown; the thick horizontal branches supplied better nesting platforms. If the plantations contained both spruce and pine, then the stage was nicely set for a real variety of birdlife. The black-throated green warbler was characteristic of pine plantations, the magnolia warbler of spruces. Both inhabited mixed plantings. Robins and towhees were more abundant in plantings containing spruce, and the veery, black-billed cuckoo and purple finch were confined to them.

Larch, because of its deciduous nature, offers little Winter protection for wildlife. Conditions are different in Summer, however. The relatively thin crown of larch, particularly if the stand is pruned and thinned, favors a ground cover of moss, brambles and herbaceous plants. Deer will use larch plantation areas from Spring to Winter; but the grouse had no time for larch until August, when they began to move in from surrounding areas. From then on through the Fall and Winter grouse visited the larch areas to feed but abandoned them with the coming of Spring.

One citizen of the plantations who didn't seem to care what species of conifer prevailed was the fox—both red and gray. Both species ranged widely in all plantations and denned in a number of them. In Winter they systematically searched the pockets beneath the spruces for prey. This was an effective way of securing a dinner until the snow reached a depth of around two feet. Then the fox found this type of hunting more difficult and the cottontail, the grouse and small mammals sheltering there were safer.

Although there are differences in the kind and quality of cover afforded by the various coniferous species, these are not the only factors influencing wildlife use. The extensiveness of a plantation, the number of openings, edge conditions and the manner in which the stand is being managed, all affect its use by wildlife.

Contrary to some current thought, small plantings of five acres and under are not necessarily the best; and often large plantations are not the "deserts" that are made out to be. The value of small plantations depends on the adjacent cover and their nearness to one another. If the plantings are close to woodland areas they will be used by deer and grouse. On the other hand if the planting is stuck out in a field all by itself it is just about the closest thing there is to a "wildlife desert." This is particularly true if the planting is beyond 15 feet tall, after which it loses its cover value for the cottontail.

Of all the game species, the cottontail benefits the most from small plantings, especially if well distributed over areas supplying good food. In fact the bunny is happier with clumps of conifers planted in otherwise good rabbit habitat than with a plantation.

A large plantation without breaks in its canopy doesn't support much wildlife either. Fortunately, variations in soil drainage, storm damage and failure of trees to survive create openings. The deliberate non-planting of a strip one chain wide on either side of fence rows in combination with open areas of poor tree survival on State reforestation areas provide further breaks in the cover and encourage shrubby growth. Thus these larger plantations offer forest-like conditions and a variety of wildlife habitat situations. Such plantations also accommodate forest birds like the veery, black-

(*Continued on page* 36)

Plantation opening provides sheltered grouse dusting area

The "Kitchen Konference"

by Albert G. Hall, *District Game Manager*

IN this age of meetings, and more and bigger meetings, the results are sometimes disappointing, because the individual has little chance to express his views. Not so, however, of the "Kitchen Konference," the round-table discussions initiated by the Farm Bureau to give every member present a chance to enter the discussion in an informal way and in a relaxed atmosphere. Anyone who has participated in an old time "cracker barrel" or "hot stove" debate appreciates the ease with which all concerned usually express themselves.

Let's take the recent "Kitchen Konference" No. 7, meeting at the Stewart Mace home in Broome Center, Schoharie County as an example. They selected as their topic: "Trespassing and Hunting." Sportsmen might feel enthused that such a topic was chosen, but perhaps if all the reasons were known as to why it was chosen, there would be reason for them to be concerned. The realization that "while most sportsmen hunt—not all hunters are sportsmen" was of special concern to this group of farmers and landowners.

A good discussion requires preparation. In this case because the subject concerned hunting, trespassing and the like, conservation officers were asked to attend to assist the group in understanding the Conservation Law and to advise from their experience. The discussion covered many individual problems but most emphasis was placed on hunter manners, hunter-farmer relations, safe use of firearms and posting with its associated problems. The friendly and broad-minded discussion of the group seems worth passing on, with regard to the more important aspects.

The group did not feel that obtaining permission to hunt was necessary, they only want courtesy which would demonstrate a respect for the property of others. They stressed that products of the land such as berries, nuts, fruit and other crops belong to the landowner and are usually a part of his planned income and should not be disturbed, certainly not without permission.

Hunter-farmer relations should be improved through intensified educational programs sponsored by the Conservation Department and the organized sportsmen. They indicated a willingness to assist in planning and carrying out programs of this sort.

The interest in the safe use of firearms showed that many landowners have definite fears for the safety of their families during the hunting season. While good manners would reduce this concern, it was felt that even more emphasis should be placed on educational programs in the use of firearms on cultivated lands.

The group felt that posting as presently done, fails to solve the landowners' problems for several good reasons: In the first place, few farmers have the time to enforce their posting, and if action against trespassers is not taken, posting is respected only by those who probably would not be objectionable to the landowner, the sort who seek permission before hunting private lands. Thus, unless time or money were spent to enforce posting, more harm than good might result. They also pointed out that posting throws greater pressure on those lands that remain open, thus making the hunting problem in those areas more severe.

It is well to mention here that the group recognized another problem that involves posting either directly or indirectly—every year sees a greater number of people from metropolitan areas purchasing land in the rural sections. Their purpose is generally to have some land for a Summer home or cottage and/or to have a place to hunt. The problem results from individuals posting this land almost immediately. Each such parcel posted reduces the amount of open land, creating greater pressures on the remaining open land and sometimes resulting in the adjoining farmers posting in self-defense. Ironically enough, many of these "new property owners" have used the privilege of hunting on open lands belonging to others for years. It's quite different, though, as soon as the shoe is on the other foot.

After the discussion was completed the meeting took on a more formal atmosphere and specific resolutions were prepared for consideration at formal meetings of the N.Y. Farm Bureau Federation. Here are the resolutions proposed:

(1) That *all new applicants* for hunting licenses be required to pass an N.R.A. test, regardless of age or sex.

(1A) That the N.R.A. Hunter Training Program be adapted and furthered in the State through the adult education program in the public schools.

(2) That *all* hunting licenses have an attached renewal stub, similar to those appearing on a driver's license under the Motor Vehicle Law, listing any violation of trespass or Conservation Law, together with the section and article number of violation. No license should be issued without presentation of the renewal stub.

(3) All renewals of hunting licenses should be dependent upon the convictions shown on this stub.

(4) That an educational program be initiated to improve hunter-farmer relations.

(4A) That all hunters receive a personal note when they purchase a license which would stress the fact that hunting on private property is a privilege and that farm owners have a tremendous investment in their property and machinery and that both are a vital part of their farm operation.

This Kitchen Konference was a good example of the close relationship between the thinking of farmer-landowners and the real sportsmen. A sportsman has good manners, respects the property of others, handles firearms safely and sanely and certainly does not like to see posted land. It definitely indicates that a common ground exists for the accomplishment of much good when farmers, sportsmen and the Conservation Department meet to plan a constructive program.

Adirondack Chickadee

Or the Case of the Missing Sailor

by Jane Hutchinson

SHOULD there be, in the ranks of conservationists, anyone who fancies himself the peer of the renowned Sherlock, perhaps he would like to apply his expert touch to an avian mystery, as a change from the horrible crimes which presumably are his usual bill of fare. If so, here is such a mystery for him:

For the last eight winters we have been the benefactors of, I've often thought, all the chickadees in the woods where we live, the woods being the 15,000-acre Archer and Anna Huntington Wildlife Forest in the Adirondacks, one of the properties of the New York State College of Forestry. In every one of these eight Winters, any number from one dozen to four dozen or more chickadees (try to count them!) have begun to visit our feeding stations regularly about October and have stayed with us right through the Winter until Spring nesting time. With the approach of Spring, when the persuasive "fee-ee-bees" roll more often through the forest, the "chicks" have diminished in numbers until probably not more than two pairs have remained in the immediate vicinity of the house. These few have continued to come to the feeders, carrying away overloaded mouthfuls of chopped suet, obviously for their young, and sometimes bringing their young to the area. After July, the feeders are not kept regularly stocked and the Summer visits nearly cease.

Some of the birds, true to their nature, have become very friendly. I would like to believe that *our* birds have behaved uniquely in return for our friendship, but must admit that, given a chance, the ubiquitous, cheerful little busybodies will return in generous measure every scrap of attention that is given them by any passing stranger.

To get on with the mystery—in the Fall of 1951 about a dozen of the birds were banded, and immediately thereafter the very friendliest "chick" of the group appeared all fancied up with three leg bands—one of aluminum color on his right leg, and a gold colored one above a bright blue one on his left leg. The blue band, being lower and not so often obscured by body feathers and movement, was more noticeable, so from that day this little eye-catcher had a name—Sailor.

Sailor often tagged along on my Winter walks. His cheerful busyness as he followed me, or flitted ahead occasionally to attract my attention (so that he would get a piece of peanut, of course) made the quiet Winter woods a pleasant place to be. About half a mile from home was the limit of his travels. At that point he would drop back if I continued on, but would usually meet me on my return very close to the point where we had parted company.

Like the majority of the "chicks," he went away from the house area when nesting time came, but was always a casual dropper-in three or four times during the Summer, fluttering around our hands and shoulders as we walked about the vicinity. As cold days approached each Fall we would wonder if Sailor would be around for another Winter. When he did return, of course, there was great relief.

Came the Summer of 1956—no Sailor dropping in and no surprise meetings with him on the trails. "Wonder where Sailor is?" we asked more than once, as worry began to nibble. Came the Fall of '56 and snow and cold, and still no Sailor.

"After all," we reasoned, "he positively has been around since the Winter of 1950-'51, because if he had not been he would not have been so friendly directly after he was banded in the Fall of '51, because (still with me?) we have made friends with no new birds in the Summer months; his behavior tells us that he was almost certainly a visitor in the Winter of 1949-'50 when we began feeding, which means that he came into this world no later than the Spring of '49, possibly before. He is therefore at least seven years old, up in the graybeard class by small wild bird standards. He is surely gone by now." And we wondered if anyone would ever be likely to spot a gay blue or gold leg band on the ground. Yes, yes, I know it sounds a little silly these days to feel concern about one tiny missing bird, but do you recall how q-u-i-e-t deep woods can be and how welcome a bit of life after hours of that quiet? Then you understand!

The Winter passed, and Sailor was not the only missing chickadee. Only three came regularly to the feeders and they were shy. Their normal greediness for food, either for immediate eating or for tucking away, was lacking. A mere handful of seeds and nuts would last a couple of days and when that was gone the "chicks" did not bother to beg for more.

There was no answer to the whereabouts of the big majority of our birds until one day in late Winter I walked on a trail which I had not used for two or three months. When I was nearly a half mile from the house, I was suddenly aware of familiar cheepings and chick-a-dee-ings in the tall hemlocks about me. I stopped, fished for the ever-present seeds and scraps of peanuts in my pocket and was amazed when without the least hesitation two of the birds took them leisurely from my hand and then followed me, begging for more. When I neared the house again they dropped away. Now, what went on? These birds were not my present feeder birds, as the latter were not eating from my hand.

Almost the same thing occurred in another direction from the house but farther away, fully a mile distant. The four or five birds in this area were not so fearless but were certainly not strictly unused to people either, and there were no people around. Later walks in both directions called forth the same behaviour. Thus the "where" of at least some of our birds was answered, but not the "why" of their absence. Most welcome, though, was the hope now stirring that perhaps we need *not* be on the lookout for a bright blue or gold leg band on the ground.

Came May of 1957. One morning as we sat at breakfast, there came the light "plink" of small bird feet landing on the rim of the window feeder; not the heavy

(*Continued on page* 36)

Moles and Shrews of New York

These Tiny, Secretive Animals Live All About Us—But Are Seldom Seen

by W. J. Hamilton, Jr., *Professor of Zoology, Cornell University*

MOLES and shrews are members of the Mammalian Order Insectivora (insect-eaters). In one form or another, they occur throughout the temperate regions of the world (a few are tropical) and are often among the most abundant of our small mammals of the field and forest. However, they are rarely seen because of their small size and secretive habits. Accordingly, they have been the subject of a great deal of myth and superstition. It is commonly supposed, for example, that moles and shrews are blind. Not true—in the living animal the hair is parted about the tiny eye and this may be seen as a small black speck. In his fine portraits, H. Wayne Trimm has indicated how these eyes appear in the living shrew.

The adult length of the several species is given. The measurement is made from the nose tip to the end of the tail.

The Moles

COMMON OR NAKED - TAILED MOLE (*Scalopus aquaticus*). 6 to 7½ inches: This large, velvety grayish mole is characterized by the short, nearly naked tail and heavy broad palms. In our State, it is restricted to the lower Hudson Valley and Long Island. This is the creature responsible for the characteristic mole ridges frequently seen in the lawns, pastures and garden plots of Long Island. The fresh tunnels are most noticeable after a heavy rain, for the mole then follows the worms that are drawn from the saturated earth to the surface.

These animals are active in the coldest months of the year (for moles do not hibernate). However, Winter frost may drive it to tunnels several feet beneath the surface where worms and dormant grubs serve its dietary needs. While many gardeners are concerned with the disfiguring of the lawn by these creatures, their tunnels warn us that troublesome insect pests are beneath the sod, waiting on the rapacious jaws of these ravening little mammals. Proper use of an insecticide will destroy the Japanese beetle grubs, wireworms and other noxious bugs, and with their destruction the moles will leave.

Beneath the temporary and shallow feeding runs, a more permanent tunnel is constructed and in this a larger excavation, about the size of a grapefruit, is prepared for the nest of dried grass and leaves. A single litter of three to five young is born in April. These grow rapidly and are able to fend for themselves when but a month old.

HAIRY-TAILED MOLE (*Parascalops breweri*). 6 to 7 inches: Quite similar to the naked-tail mole, this species is recognized by its well-furred stubby tail and slaty coloration. It occupies much of the State, starting its range where the common mole leaves off. We have found it well up on the Adirondack peaks and it is a common resident of the mixed hardwoods of central and western New York. Often it leaves its shallow burrows to forage on the forest floor where vigilant foxes, cats and owls snap it up. The tunnels made by these moles often persist in hard soil for many years and are veritable highways utilized by the smaller woodland mice and shrews.

Three to five young are born in a compact nest of dead leaves well below the ground level. The blind, naked young grow rapidly and in a few weeks are living a solitary life of their own. All of our moles probably produce but a single litter, for their underground habits protect them, in a measure from the many predators. Our New York mole skins, while beautiful, have no commercial value, but the largest West Coast and European species command a small price in the fur trade.

STAR-NOSED MOLE (*Condylura cristata*). 7 to 8 inches: No mammal in the world can be confused with the star-nose. Its 22 pink finger-like projections on the snout serve to distinguish it at once, while the long tail is distinctive of American moles. Blue-black to sable in color, it is also much darker than other New York moles. While it occurs pretty much over the State, there is but a single record from Long Island.

Not as strongly built as the other two moles, the star-nose delights in damp mucky ground and is often at home with the muskrat. Indeed, they often venture into the rat houses and occasionally are taken by the muskrat trapper.

The star-nose is an accomplished swimmer, using the tail as a scull. I have taken several in minnow traps. Much of its food is secured in damp places, even small fish being captured. In Winter, the muck is thrown from the damp burrows onto the snow. The three to six young ones are born from April to early June, and even the newborn, without trace of fur, possess the distinctive nose tentacles. The long tail may become greatly swollen during the late Winter. Since it is more exposed to predation than the other moles, predaceous fish, birds and the larger mammals take a sizeable toll.

The Long-Tailed Shrews

(The long-tailed shrews have tails which are more than an inch in length. The snouts are extremely pointed.)

MASKED OR COMMON SHREW (*Sorex cinereus*). 3 3/5 to 4½ inches: This mammal sprite, with light brown coat and long slender tail, approximates a nickel in weight. It is a widespread

(*Continued on page* 26)

Moles and Shrew of

Hairy-tailed Mole

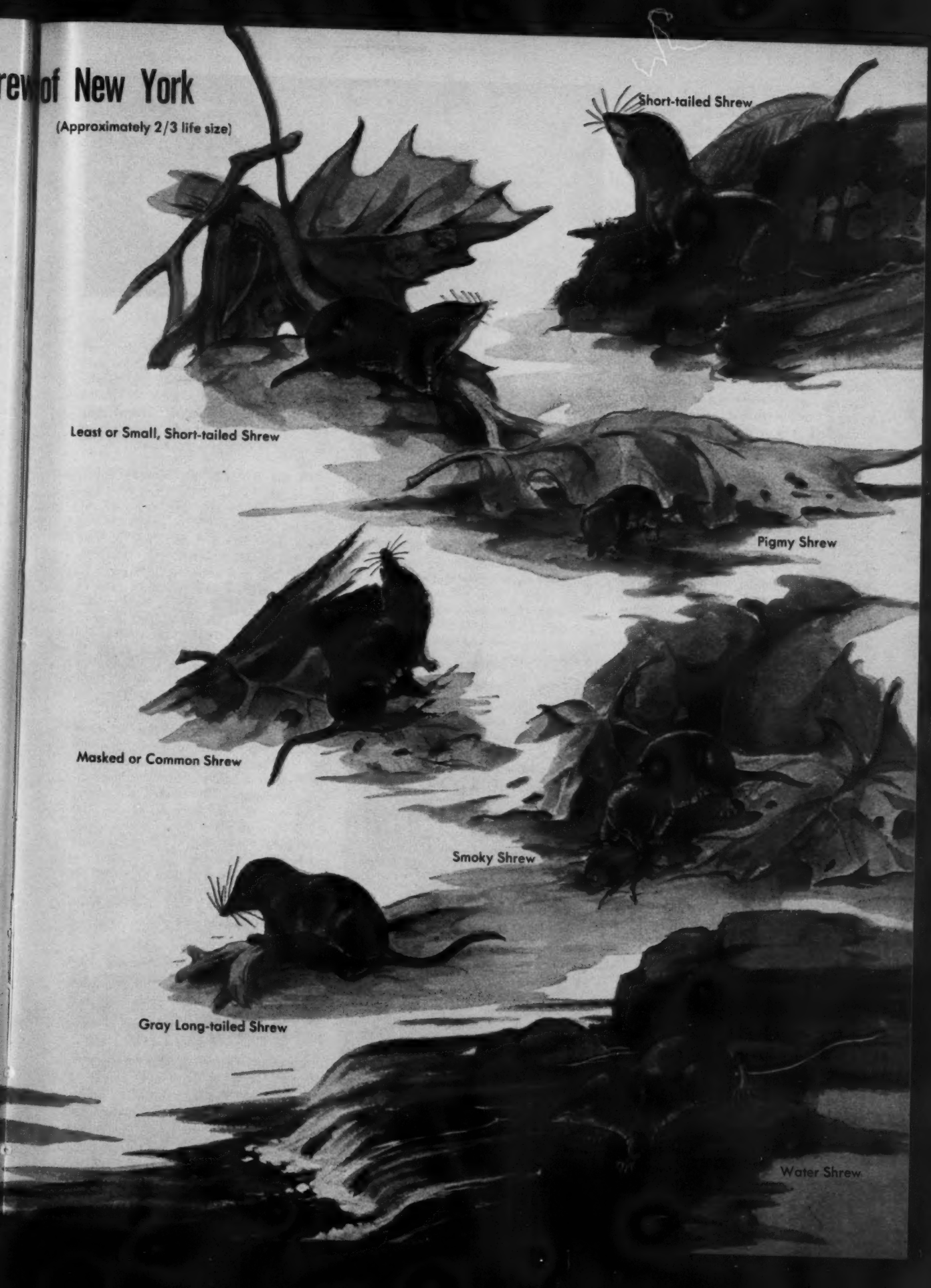
Common or Naked-tailed Mole

Wayne Trimm

Star-nosed Mole

rew of New York

(Approximately 2/3 life size)



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shrew in New York, occurring from the tidal marshes of Long Island to the treeless heights of the Adirondack peaks. Like other shrews, subzero weather holds no fear for these little creatures. Their tiny snow tunnels thread the marsh or hemlock forest in the coldest weather. Here they seek the insects, snails and other dormant life in the decaying vegetation. The appetite of shrews is phenomenal, as well it must be to maintain the body heat of these minute creatures. The common shrew has been known to eat an amount in excess of *twice* its own weight in a 24-hour period.

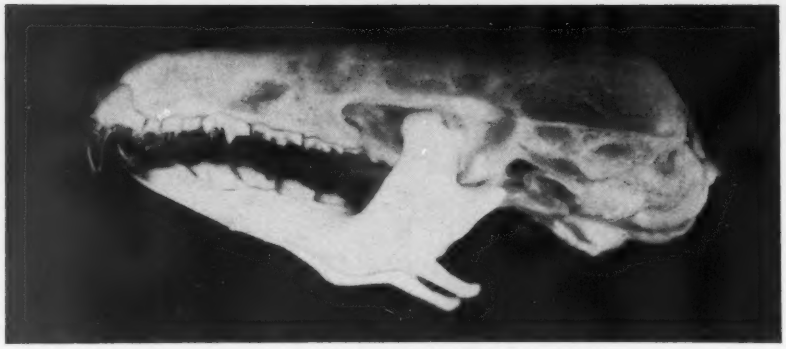
Some years ago, my son and I uncovered the nest of one of these shrews at Shinnecock Inlet on Long Island. We captured the mother and five nursing young. The combined weight of the youngsters was more than three times that of their parent. This strenuous family duty is multiplied several times during the Spring and Summer, for shrews are prolific and may produce a dozen or more young during the protracted season of reproduction.

SMOKY SHREW (*Sorex fumeus*). 4 2/5 to 5 inches: The smoky shrew, considerably larger than the common shrew, is lead colored in Winter pelage, assuming an olive brown pattern in the Summer. While the ears of most shrews are well hidden in the fur, those of the smoky shrew are rather conspicuous. It is a creature of the cooler mountains and heavy forests, but does venture into grassy fields upon occasion. Ranging widely over the State, this species apparently does not occur in the vicinity of New York City or Long Island.

Many shrews have a remarkably short life span, seldom living more than a year. The smoky shrew is no exception. Born in the late Spring or early Summer, it goes into the Winter without reaching sexual maturity. In March, it increases weight rapidly, becomes capable of breeding and produces two, possibly three litters in the Spring. These old individuals have worn teeth and exhibit other characteristics of old age. As the Summer wanes, these oldsters begin to disappear from the population and as another Winter approaches, the young of the year make up the surviving shrew population.

The shrews are beset on every hand by an army of predators, even the larger short-tailed shrews considering them legitimate prey. I once examined the stomach of a 32-pound bobcat, the sole food consisting of a long-tailed shrew.

GRAY LONG-TAILED SHREW (*Sorex dispar*). 4¾ to 5¼ inches: If one sets his mouse traps among the cool boulders and roots of the Adirondack or Catskill mountains, he may be fortunate enough to collect one of these shrews. Of slimmer build than the smoky shrew, with longer tail and uniform dark gray or slaty fur, this little prize is considered the rarest of New York shrews. One naturalist has likened this species to a swift lightweight cruiser and the smoky shrew to a heavier slower battleship. So few have been handled by man that the habits are scarcely known. If one would see this tiny mammal, and most of our other shrews, he must equip himself with a good supply of mouse traps, baited with peanut butter, and place them in the habitat of small mammals. Many woodland mice and the commoner shrews will fall victim to the traps before one of these rarities will be taken.



Skull of short-tailed shrew; note well developed teeth

WATER SHREW (*Sorex palustris*). 5½ to 6 inches: Longest of our shrews, this beautiful beast is one of the more distinctive of its tribe. The nearly black upperparts, a silvery belly, hind feet fringed with stiff hairs, and a long tail, dark above and white below, serve to distinguish it at a glance. As its name implies, the water shrew frequents wet places, often occurring along the shore line of rushing mountain streams or the sphagnous swamps bordering beaver meadows. In our State, the Adirondack and Catskill mountains are the most likely place to find this species. One was recovered from the stomach of a large brown trout.

The water shrew swims and dives with great celerity. Miraculously, these tiny, swift creatures can actually *run on the surface* of the water. One observer saw a shrew run a distance of five feet across a small pool, the surface of which was glassy smooth. The body and head of the animal were entirely out of the water, the surface tension of the water supporting the shrew, and at each step the animal took there appeared to be held by the fibrillae on the foot a little globule of air, which was discernible in the shadow at the bottom of the pool. A friend of mine was once troubled with some small predator which continually pilfered the trout eggs sunk in flowing water. Baiting a weighted mouse trap with these eggs, he was rewarded by catching several water shrews.

PIGMY SHREW (*Microsorex hoyi*). 3¼ to 3½ inches: This is the true mite of the shrew world, and probably the smallest mammal. Some adults do not weigh more than a dime. While it looks like the masked shrew, the relatively shorter tail will serve to distinguish it.

Pigmy shrews are relatively rare in collections. This rarity may be apparent rather than real, for the student of small mammals may mistake this species for the masked shrew. A captive taken at Clinton, New York, was housed in an aquarium, and made holes in the dirt floor of his quarters that could well have been mistaken for those of a nightcrawler. All shrews have prominent scent glands along the side of the belly which give rise to specific odors, these usually being more marked in the breeding season. Apparently this makes the shrew distasteful to some animals. At least the house cat will often catch these animals and leave them on the doorstep. One Spring morning a neighbor brought me a pigmy shrew that had been deposited on the doorstep by tabby, just a few rods from a field where I had used hundreds of traps for many weeks without catching one.

The Short-Tailed Shrews

(The short-tailed shrews, so called because their tails seldom exceed an inch in length, are heavier-bodied than the long-tailed shrews.)

LEAST SHREW OR SMALL SHORT-TAILED SHREW (*Cryptotis parva*). 3 to 3½ inches: The least shrew is a diminutive fellow, not often seen by man. Keener eyes may pick it up, for great numbers

(*Continued on page* 36)

Our State Forests —a Growing Asset

by R. Milton Hick,
District Forester

Distribution of State Forest areas

A little research into the history of natural resource conservation discloses some amazing items—not the least of which is the fact that before 1929 there wasn't a State Forest within the boundaries of this—the great State of New York.

Up to that time the Conservation Department's Division of Lands and Forests was primarily interested in the Forest Preserve; in fire and pest control and in the forest nurseries for the raising of trees for public use. Very little technical forestry was being practiced in those days, due primarily to the Constitutional restrictions placed on Forest Preserve land. The State had vast acreages of forest land in ownership, but then, as now, they offered no opportunity for the professional foresters to practice forest management.

With the advent of the Hewitt Law, or Reforestation Act, however, a new field was opened up which would allow New York State to acquire lands for timber production. Under the terms of this Law, the Division of Lands and Forests was empowered to acquire abandoned or semi-abandoned lands, to plant trees thereon, and to sell products from these lands.

In 1930, following passage of the Hewitt Bill, five Forest Districts were established in counties outside of those containing Forest Preserve lands and District Foresters were placed in charge of each. Then, in 1932, by an amendment of the original bill, five additional districts were established, each headed by a District Forester. Unlike the first five districts, these latter included counties lying within the Forest Preserve.

These District Foresters were charged with the purchase of land and, when titles had been approved, with the planting of trees on all open areas. Such work proceeded in an orderly fashion and these early days witnessed the planting of millions of trees grown at our own State nurseries. In District No. 1 (Delaware, Otsego and Schoharie counties) for instance, there were two years when more than 5 million trees were planted each year in the tri-county area. There were as many as twelve planting jobs going on simultaneously, involving over 700 tree planters. Labor was hired at 40¢ to 50¢ per hour and a man was expected to plant 1,000 trees per day. Oftentimes this figure was exceeded, with a 12-man crew planting as high as 18 to 20 thousand trees per day. Many comments were heard as to the merits of such a program. Some said that the trees would all die anyway, but that the wages paid often allowed the laborers sufficient money to pay taxes on their homes.

Well, we're happy to say they didn't all die, and today, 29 years later, the People of the State of New York have 565,695 acres in State Forest lands. Of this, 278,173 acres have been planted with a total of 319,360,800 trees. Figures indicate that up to 1940 this was one of the largest tree planting programs undertaken in the United States. Gradually, as time went on, less land was available for purchase, and the emphasis on land acquisition and tree planting shifted over to such management phases as protection —protection from fire, disease and insects.

While the CCC from the period 1933 to 1940 was responsible for the improvement of many acres of natural forest stands, not much could be done with plantations until they became 15 years old, an age bracket that these early plant-

Scaling sawlogs to determine board feet

This stand selectively logged in 1945; note natural reproduction coming in

ings didn't achieve until 1945. Since that time, thousands of acres of State plantations have received benefit of thinning and pruning operations; particularly the red or Norway pine and the white pine. This accomplishment has come about through the State's Capital Construction Program with money alloted to the Conservation Department and the Bureau of State Forests.

Having started on a program of forest management and having many natural stands improved by CCC crews, it became more obvious that some sales opportunities should be opened up to dispose of forest products.

Red pine pulpwood—a product of thinning operation

In considering sales of forest products from State Forests, two things were involved. First, were sales from existing natural stands that were a part of nearly every land purchase; and secondly, sales resulting from the thinning operations conducted for the improvement of forest plantations.

Let's consider the natural stands. Generally, upon acquisition, these were badly depleted by prior cutting operations and oftentimes a piece of land was purchased with outstanding cutting rights. On these, the owner had a right to cut all merchantable timber after the land was sold to the State. In some instances these rights were not exercised and much good timber came into State ownership. It is this resource that has saleable possibilities. As time goes on, more and more of these stands will become merchantable and should be sold on a sustained basis to furnish local mills with a continuing resource.

In the case of forest plantations, there is an entirely different situation. The material is all softwood; it is small; therefore, unusable as sawlogs, and the demand is limited. Consequently, the main outlet for these small trees will be in the form of pulpwood, highway guide posts, small poles, etc. Some sections of the State are more fortunate than others in relation to finding markets for this material. Distance from a pulpwood mill, and to other sources of use is the factor which determines if this material can be disposed of. Much of the material has been used by the Department, itself, particularly by the Bureau of Camps and Trails in its construction and maintenance of public campsites.

Despite the fact that the State Forests are just coming into their own, early cash revenue is respectable. According to the 1956 Annual Report to the Legislature, the total income since the beginning of the State Forest program (1929) has amounted to $839,189.12. Of this total, $624,000 has been realized from the sale of Christmas trees and timber products. These products represent over 5 million feet of sawlogs, 14,800 cords of pulpwood, 16,000 cords of fuelwood, 265,700 posts and poles, and more than 480,000 Christmas trees. As with the U. S. Forest Service, which for many years operated in the "red" but is now in the "black," there is great promise that the State of New York (as time goes on and management practices take effect) will increase this revenue until it exceeds the operating expense of our State Forests.

Here in District No. 1 (Delaware, Otsego and Schoharie counties), we are well pleased with the sales program to date. Beginning in 1940, ten years after the reforestation program started, we sold the first Christmas trees (500 trees for $65) ever disposed of from State-owned lands. It was the start of a program that, during the past 18 years, has netted the State over $30,000 a year. But more than that, this operation provided the first thinning of many of our spruce stands—a so-called "thinning at a profit." Further, it provided such a convincing demonstration that more and more private land owners have developed Christmas tree farms.

Pulpwood sales also have been quite successful in this District. These sales are for both hardwood and softwood species. In the case of hardwood, it allows us to improve existing stands of timber by removing some of the poorest material. With softwoods, our sales have been mostly of Norway or red pine, native red spruce and larch. Let me cite an example: On a State Forest near Milford (Otsego County) we have two pulpwood operators; one works alone full-time, the other just week ends. The one who works alone recently completed thinning a plantation of 60 acres. From this he sold approximately 250 cords of pulp. The State received $1 per cord, but the operator's sale price was about $5,000 ($20 per cord). We now have 60 acres of pine with a second thinning completed at a saving of $1,500, if the work had to be done with State labor crews. The part-time operator likewise has cut and removed about 175 cords of wood with a similar saving to the State of another $1,000 in labor.

In like manner, this District last year sold more than 500 cords of standing pulpwood. Our goal is 1,000 cords a year and we are hopeful that it will be reached during the year 1958-1959.

With natural stands, our products are somewhat different. Here we are dealing with sawlogs which go to local mills for the production of lumber. Our first sale was made in 1945-1946 and consisted of 140 M feet of hardwood sawlogs. At the time, prices were down to $10-$15 per M stumpage. Marking was conservatively selective, removing the mature or over-mature trees in the stand. Today (13 years after), our Foresters estimate that we could sell another 100 M board feet from this same area at prices nearer $35-$40 per M board feet. This is what management does for a forest; it puts it in growing condition for repeated harvesting of crops of timber. To date our experience has been that for each timber sale made on a forest, providing it approaches 125 M board feet or better, that the income will liquidate the original land cost of 1,000 acres

(*Continued on page* 37)

Fomes Annosus

Another Plantation Disease We Could Do Without

by John H. Risley, *Forest Biologist* and Wm. E. Smith, *Forest Pest Control Foreman*

FOMES ANNOSUS might be the name of a new soft drink. It's NOT! It's the name of a killer! This lethal tree fungus is not an European import—for a change—but occurs world-wide through the North Temperate Zone. In New York State, it is presently known to have invaded ten counties—and there is no known effective control measure to stop further spread of the disease.

Left: Infection spreading into healthy plantation. Right: Fruit body of fungus.

Records indicate that this European fungus disease has been with us in New York ever since 1891; probably earlier. In that year, however, the fruit body of the fungus was first collected at Salamanca and identified as the present day villian. The early records also show that *Fomes annosus* was distributed in natural timber stands but very infrequent in occurrence. The fungus finds plantation life much more to its liking, however, as we shall show.

Fomes annosus may occur on any of our conifers and occasionally on hardwoods, particularly when associated with conifers. This disease acts either as a killer or as a butt-rotting agency. Normal means of entry into the living tree by this disease is through the roots, with inoculation taking place when an infected root either contacts or is grafted to a healthy root. Plantations are usually initially infected when the spores attack the stumps or trees cut down when thinned. This accounts for the increased incidence of the disease in plantations in contrast to natural stands. Spores of the fungus alight on the freshly cut stumps and decay progresses down the stumps into the root systems where it may contact live roots from adjacent healthy trees. A minor means of infecting healthy trees occurs from mechanical injury to roots and bole during thinning or logging operations, allowing the spores to enter the wound. Fragments of diseased wood have been known to remain viable in the soil for several years.

The perennial conks of this fungus are found mainly on stumps, dead trees and roots. They may vary in shape from the bracket type to flat layers, depending on their position. The upper surface of the conk or fruit body varies in color from reddish-brown to grayish-brown, while the under surface is white in the early stages. Upon aging, the under surface takes on the delicate brownish cast of a properly baked biscuit. The under surface has many tiny pores which emits an immense number of spores. These are transported to new victims by wind and water. A feature of this fungus is its ability to grow around obstructing objects such as needles, barks, sticks and grass. The conks are well camouflaged at the base of the infected tree or stump, sometimes going completely unnoticed until the litter is cleared away. Sporophores of this fungus are frequently found in subterranean positions on roots of blow-down trees or on exposed roots in animal burrows. On rare occasions one might find a conk on a live tree infected by the butt rot. However, the number of conks one can observe of this fungus is seldom an indication of the amount of damage present.

This fungus disease is classified as a butt rot because the decay progresses up from the roots into the base of the tree. The infected wood in the early stages is pinkish to dull violet in color. In the more advanced stage of decay the wood becomes a light yellow in color, pitted with small white elongated pockets. Black specks, not always common, may be seen at the side or in the middle of the white pockets. When advanced decay has occurred the fragile tissue in the white pocket crumbles away leaving holes; the dry rotted wood now has the consistency of coconut fiber. If the bark is pried off the trees in the early stages of decay, a white mat of mycelium (threadlike filaments) can be found advancing ahead of the decay. In pine during the early stages of infection, one may note a quantity of resin impregnating the wood.

In a plantation following thinnings the first signs of the disease are usually a general unhealthy appearance of the crown, accompanied by a rapid falling off of height growth for the past several years. The needles in the crown tend to shorten and have a greenish-yellow color; occasionally all of the needles will drop except those of the current year. Next, one or two trees will die, soon to be followed by adjacent trees in an ever widening circle. It may take several years before the fruit bodies appear on the dead trees or stumps. On occasions, two or three of these spots will show up in a plantation. The first signs of death or even an unhealthy appearance may occur as early as three years after thinning. The method of thinning does not seem to matter as we have found the disease present in stands thinned by axe-girdling, axe-felling, or poisoned with sodium arsenite. To date we have found that thinned plantations of red pine are most affected in our State. However, the fungus disease is extremely adaptable to a wide range of hosts and growing conditions. A really large buildup of this disease can be expected in the second rotation of trees planted on sites where infection has previously occurred.

What type of control measures can a plantation owner apply to protect his stand? Based on current information, there is at present no accepted method of satisfactory control; you will have to live with it. Research on the control of this disease is presently being undertaken by Europeans, but it is hoped that work on this problem will be undertaken in this country soon. Meantime, if your plantation has shown indications of this disease contact your District Forester. Trained personnel will examine the stand in question and will collect samples for culture for its verification.

Fomes annosus is a potential threat to all coniferous plantations in the State as soon as they have been thinned. Conversely, plantations that are not thinned are much less likely to attract infection by this fungal killer. Accordingly, it would seem like good sense, in setting out new coniferous plantations, to space the trees sufficiently to eliminate the need for early thinnings where such a practice would not encourage some other damaging pest.

Ashokan Reservoir

Location

Ulster County, 14 miles west of Kingston, on Esopus Creek in Lower Hudson Watershed

General

Ashokan Reservoir is a unit in the Catskill System of the New York City Water Supply. The Reservoir was completed in 1915 at a cost of $30,500,000

The Catskill System originates in Schoharie Reservoir on Schoharie Creek, a tributary of the Mohawk River in Greene County. Here run-off is stored from 314 square miles of watershed

From Schoharie Reservoir the natural flow of Schoharie Creek to the north is diverted and conducted to southward flowing Esopus Creek through the 18-mile Shandaken Tunnel. The tunnel discharges into Esopus Creek just south of the Village of Allaben. This water, together with the run-off from 257 square miles of watershed, in the Esopus drainage is conveyed to Ashokan Reservoir by natural stream flow

From Ashokan Reservoir, water is conducted by gravity through the 74-mile Catskill Aqueduct to Kensico Reservoir in Westchester County. The Aqueduct crosses under the Hudson River at a depth of 1,114 feet below sea level

The Catskill Aqueduct continues from Kensico to Hillview Reservoir in Yonkers, the flow also by gravity. From Hillview Reservoir, water is delivered to New York's five boroughs by two pressure tunnels which connect with the 5,000 miles of distribution mains in the City. The Catskill System continues through trenched tunnels across the Narrows and terminates in Silver Lake Reservoir, Staten Island

Physical Features

Ashokan Reservoir separated into basins by Dividing Weir:

East Basin	
Area:	*5,131 acres*
Elevation:	*588 feet*
Max. Depth:	*98 feet*
West Basin	
Area:	*3,184 acres*
Elevation:	*590 feet*
Max. Depth:	*180 feet*
Total Area:	*8,315 acres*
Length:	*12 miles*
Max. Width:	*2.4 miles*

Chemical Characteristics

Surface water (up to 20′ depths) slightly alkaline
Deeper Water: Slightly acid, oxygen excellent at all depths

Principal Game Fish

Rainbow trout
Brown trout
Pikeperch
Smallmouth bass

Other Fish Present

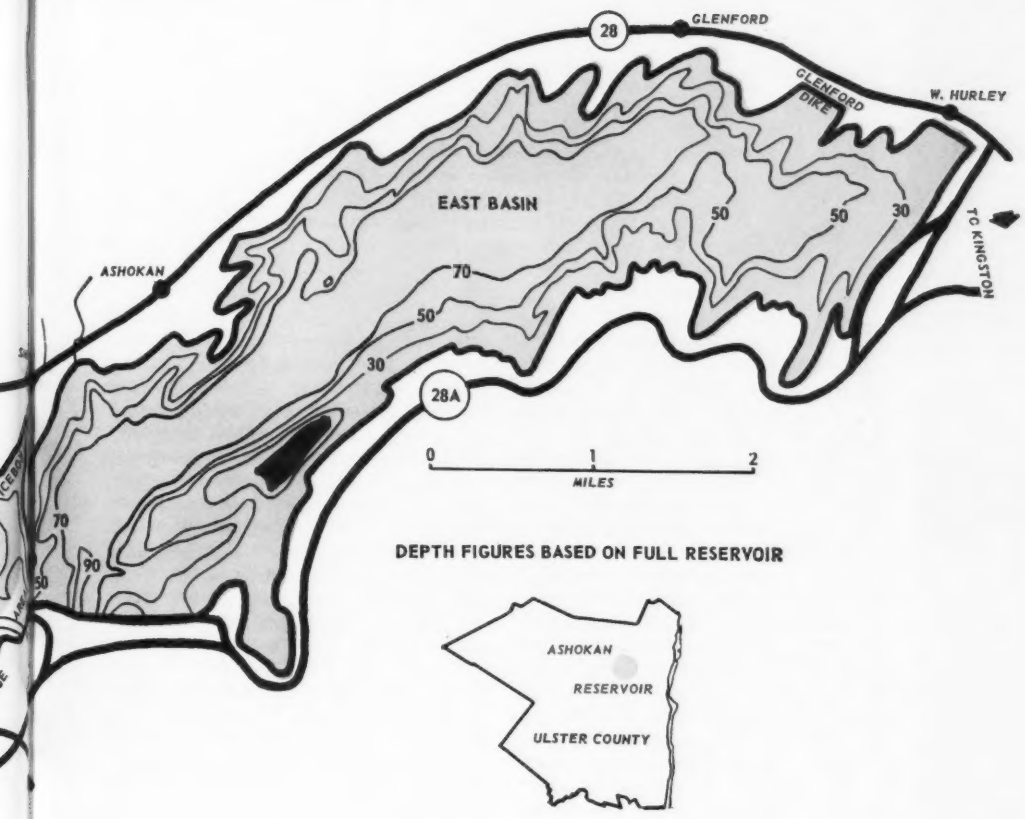
Yellow perch
Rock bass
Bullhead catfish
Chain pickerel
Sunfish
Suckers
Minnows

Fishing

New York State fishing license required. Fishing from shore and boats by special permit only. Fishing permits may be obtained from following offices of New York City Department of Water Supply, Gas and Electricity:
Kingston, Main and Fair Streets
Kensico Reservoir, Valhalla (Lower Gate Chamber Building)
Katonah, Route 35, just east of N.Y.C. Railroad tracks
Carmel, Route 6, just west of Carmel
Manhattan, Municipal Building
Brooklyn, Municipal Building

Boating

A boating permit will be issued only to a boat owner who has a valid fishing permit. Boating permits must be renewed



annually by written application to the Department's office at 1932 Arthur Avenue, Bronx 57, N.Y., or to the Department's office at the Municipal Building, Room 2360, New York 7, accompanied by a self-addressed, stamped envelope

Only substantial rowboats of a minimum length of 11'6" and of a type considered safe by the Department will be permitted. Sail boats, motor boats, canoes, or collapsible boats will not be permitted. Boats less than 14'6" in length will be limited to 3 occupants and boats of that length and in excess thereof may be permitted to carry 4 occupants if the permit is so endorsed

Permittees must have their permits on their persons when on city property described herein, and upon request shall show their permits to a Department representative or other duly authorized official. Any violation of these rules is cause for revocation. Permits of violators shall be surrendered upon request to the Department employee in whose presence any violation takes place. Such permittee must immediately leave the City's property and not enter thereupon until his or her permit is reinstated

Special Reservoir Regulations

Boating, fishing and entrance upon the property are prohibited in the following areas, posted with yellow signs, "No Entrance for Any Purpose":

1. *Within 1,000 ft. of Olive Bridge Dam and 1,000 feet of the Dividing Weir and Upper Effluent Chamber in the West Basin*
2. *West of a line between the North end of the Dividing Weir Bridge and the first bend of the Middle Dike approximately 1,000 ft. East of the Upper Effluent Chamber in the East Basin*
3. *Fishing from any portion of the Middle Dike*

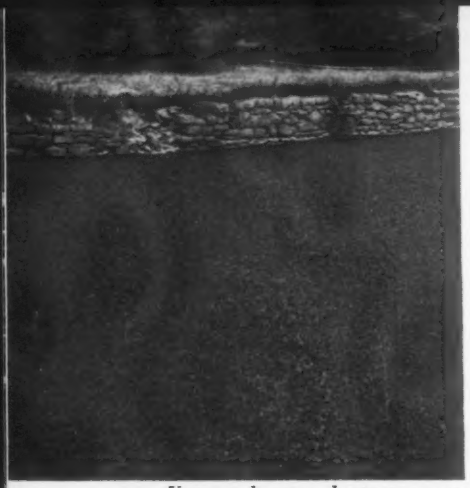
Special Fishing Regulations

Three (3) brown and/or rainbow trout in aggregate per person per day
Pikeperch: Open season from second Saturday in April through March 1st
Trout Water: No tip-ups permitted

Hunting

No hunting permitted on reservoir property

—Cecil E. Heacox,
Secretary, Conservation Department



Untreated water chestnut carpet

2, 4-D as a spray; kill only partial

2, 4-D used in pellets, foreground; as vermiculite, background

Battle Report on Water C

by John R. Greeley,
Chief Aquatic Biologist

Especially prepared herbicides and new control techniques developed experimentally in New York are paving the way for an all out attack upon this menace to our waterways.—Editor

IF you have ever wandered into an area of forest blow-down, or tried to cross a swamp you will recall that "panicky" feeling of wondering if and when you ever will get out. You can get the same feeling any Summer day trying to navigate a boat on the lower Mohawk and Hudson rivers. Here, from about the middle of June until late in the Fall, the bays are just about closed to human use by an unbroken mat of an aquatic ogre called water chestnut.

People who use or try to use these waterways regularly know the water chestnut all too well, but those who have not met this plant, face to face, are likely to know too little about it for their own good. When it first starts in a new area it usually attracts little notice. A plant or two, growing unobtrusively, might even be considered rather pretty. But given time to spread, these pioneers will result in a first-rate menace to any recreational use of waters.

It is difficult to see why we should be so unfortunate as to lose such a valuable resource as the American chestnut by a blight while the menacing aquatic "chestnut" flourishes blight-free. It's understandable, however, for the exotic water chestnut is not a tree and not even remotely related to the real chestnut. Instead it is a water plant with a large, thorny seed that can puncture a hole in a rubber boot or the sole of your foot—if you get too close to it.

But, you don't have to get that close to a water chestnut to dislike it. In fact you just *can't* get close to most of the millions of these plants that clutter up all too many of our waterways. Nothing short of an airboat can get through the dense mats of greenery which interfere with such Summer recreations as boating, fishing, swimming and water-skiing. Since the plants die down with the first frost, perhaps the duck hunter can manage to get his boat where he wants it but, unfortunately, the better duck food plants will not be where the water chestnut has shut off the light all Summer. All and all, it is understandable that the water chestnut plant has no friends.

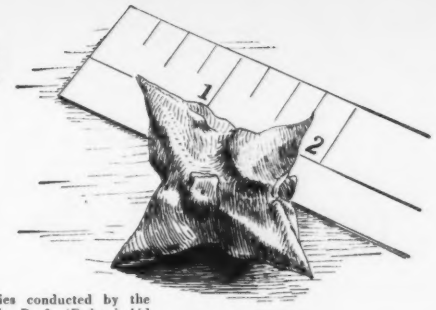
Such unpopularity must be (and is) deserved. Everyone agrees that the sooner we get rid of water chestnut, the better. This insidious weed does not seem too bad when it first creeps into new waterways as a few, widely-scattered plants, but there's no time for complacency with this menace. Just permit it a "toehold" and within a few years these few plants will multiply into dense, impenetrable mats. There may be worse plants (many people in the deep south think water hyacinth is far worse) but here in New York, water chestnut tops the black list. Certainly, we would be most foolish to permit the water chestnut to make further inroads upon our waterways. Fortunately, this pest is not statewide and can be confined to a gradually diminishing area and, ultimately, exterminated—*if an all out battle is made.*

But extermination will take maximum effort, for the plant has a number of effective weapons: It infiltrates new areas and remains in hiding until well entrenched; its seeds possess the power of delayed germination so plants keep coming up for several years after extermination seems to have been complete; it is vulnerable to attack for only a few weeks and fighting it too early results in missing plants which have not reached the surface or later sprout from broken stems. On the other hand, control efforts too late in the season will permit the plant to drop off mature seed to sprout in subsequent years.

Control Procedures

Efforts to fight water chestnut have thus far been partially successful but could be greatly improved. First, more people must appreciate the threat posed by this plant, learn to recognize it and actively scout for water chestnut so as to detect it early in waters where it has spread. Hand pulling of plants for a few years will exterminate new infestations,

r Chestnut



This article is based on studies conducted by the Conservation Department under the D. J. (Federal Aid in Fish and Wildlife Restoration) program.

if spotted before it has an opportunity to become throughly established. Second, a long range, active eradication program should be extended to the entire area of known infestation. Up to the present, we have been fighting what amounts to no more than a delaying action to confine water chestnut to the areas of heaviest infestation—the lower Mohawk and lower Hudson rivers areas. Priority in control effort has been given to outlying areas where further spread of the plant would be most disastrous. One such area is Lake Champlain where combined action by New York and Vermont is gradually eliminating the water chestnut. Another is the Finger Lakes where two infestations are now nearly exterminated. However, such a delaying action, although successful in locally eradicating water chestnut in a number of areas, affords no relief to the thousands of acres of the Mohawk and Hudson rivers where recreational use of waters has suffered severely from this plant nor can it hope to end the threat of spread once and for all.

New Weapons

But we hold some new and promising cards in this game too. One of the best is 2,4-Dichlorophenoxyocetic acid. Don't worry about pronouncing that; hardly anybody can. Just call it 2,4-D, as we do. Now, 2,4-D isn't exactly new; we've used it before but last season we applied it, experimentally, in a much different manner than ever before—in pellet and vermiculite forms.

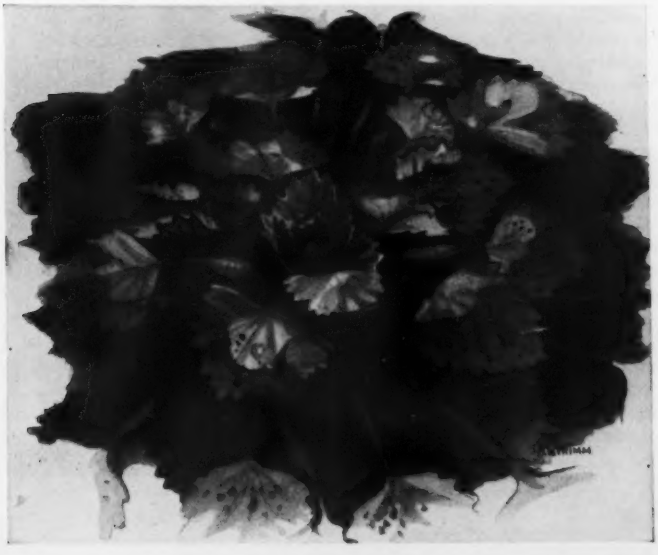
This came about as a consequence of recognizing that we must extend the battle on a much wider front if we are to stop the enemy. Aiding us in the campaign is John H. Steenis of the Patuxent Research Station, U. S. Fish and Wildlife Service. With his help, and that of several chemical companies who are actively co-operating in this study, much useful information has been secured. The most outstanding new development resulting from these tests is the effective trial of granular formulations of 2,4-D rather than liquid sprays. These granular preparations as noted, include both clay pellets and vermiculite.

The most encouraging feature of granular preparations containing 2,4-D is the thorough, one-shot job of killing water chestnut they have performed. While sprays are effective, experience has indicated they must be timed exactly right or considerable regrowth takes place. The probable explanation of the better results obtained by use of dry formulations is that the granules sink to the bottom and the 2,4-D is liberated near roots of the plants. Here the chemical is absorbed by the root system and carried up into the plant tissues. In contrast to this, 2,4-D can by sprayed on surface leaves of water chestnut without reaching downward so as to affect the lower stems.

Fine vermiculite preparations containing 2,4-D and 2,4,5-T (an allied herbicide) are on the market and appear to be well suited to control of water chestnut after the plants have formed a dense growth. At that stage the material can be applied without danger of blowing on the surface of the water. Due to the fine nature of vermiculite and its low specific gravity it is slow to sink and subjects the entire plant to treatment.

Clay pellets 8/15 mesh (⅛ inch to 1/15 inch) seem suitable for a wider range of conditions as they sink readily and were found to be effective in mid-June when plants were small and had not formed a dense mat. Further work is being done to interest manufacturers to formulate pellet preparations with soluble forms of 2,4-D. Most of the pellets available commercially for control of aquatic plants are manufactured to liberate the 2,4-D very slowly. This has been reported as effective on many water plants over a long period, as for example when applied long before these plants reach the surface. However, the tests on an experimental plot basis with water chestnut indicate that treatment should be delayed until the plants are readily visible. Under these conditions a more rapid treatment by more soluble forms of 2,4-D is likely to be cheaper and more effective. Then too, a greater solubility has the added advantage of a quick dissipation of toxicity so that desirable water plants can take over more quickly in treated areas.

The field of development of new herbicides both as special formulations effective against water chestnut and as entirely new chemicals is a highly promising one. From experience to date we feel that control methods are sufficiently effective to justify expanding the water chestnut eradication work to the practical limit of available funds. This, however, will still be far short of the much needed all out battle against known infestations of water chestnut. It is to be hoped that locally interested persons including boating associations, owners of water front property, fish and game clubs and others will join the fray. It is likely to be a dirty, muddy fight but a necessary one if the future of recreation in our waterways is to be assured.



the back of the book

A major resource and problem

Periodically, newspaper items, magazine articles and special reports point up the ever-increasing need to conserve and improve our water resources. History reflects many instances where the availability of water has been the basic cause for the rise or fall of empires.

Recently, United States Secretary of Health, Education and Welfare, Arthur S. Flemming, summed up the situation and posed some of the problems with which we are faced: "A sustained and vigorous attack on water pollution in this country is a 'must.' Despite billions of dollars spent for waste treatment facilities, the construction of these facilities has not kept pace with the growth of our population and the expansion of our industry. The need for water is growing by leaps and bounds. The supply of safe, usable water is shrinking. In 1900 we used 40 billion gallons of water per day. Now we use 270 billion gallons and by 1980 we will need about 600 billion gallons per day. But as the need for water has grown—so has the pollution poured into our streams. For 30 years we have dumped more wastes into the water supplies of the Nation than we have been removing through treatment."

Fishermen and enthusiasts of other aquatic sports may well cast a wary eye toward these ominous facts. For without a concerted, stout and continuing public effort to remedy our pollution binge, their favorite sports arenas might well become stinking cesspools. You can't fish, ski or swim in sewage-ridden waters —and the boating is not much fun either.

Although we have not been building treatment plants fast enough for our zooming population (it has passed 175,000,000), the U.S. Public Health Service through its Water Supply and Water Pollution Control Program, has made commendable progress since the passage of Public Law 660 in 1956. This law authorized Federal grants to communities to encourage and assist in the construction of municipal sewage treatment works. Requests must originate, however, with the community, and the state agency concerned with water pollution control (in our case the New York State Health Department) must sift the community requests and determine where the most urgent needs lie.

Since the passage of the Federal Water Pollution Control Act in 1956, more than 1,200 projects have been approved in the U.S. involving over $100 million in Federal grants and $430 million in local community funds. Public Health Service statistics show that every state and the District of Columbia have asked for and received Federal money for sewage plants. Communities have put up about $4.30 of their own for each Federal dollar received for construction.

From the date of enactment of Public Law 660 (July 9, 1956) through August 31, 1958, New York State Communities requested a total of $11,627,149 for building sewage disposal plants; received Federal fund grants amounting to $5,895,801.

Each of us has a stake in the municipal-State-Federal co-operative effort to provide clean waters. Water we must have to live. But the millions of Americans who like to fish, water ski, swim, boat, skin-dive, duck hunt and otherwise seek recreation on lake and stream, have a multiple interest in water conservation.

Closed season on 'planes

It seems that some of Arizona's bird hunters are confused or they are having trouble distinguishing between quail, dove and airplane. One crop duster pilot complained of being sprinkled with birdshot on two occasions—once during the dove season and again during the quail season.

In New York, the Conservation Department observation 'plane—painted a bright yellow—has been shot at while surveying waterfowl populations. A Cessna doesn't look much like a "goose" either.

White scaup

Thousands of greater scaup migrate through New York each year but it is very seldom that an albino broadbill is observed, much less taken, during the open season.

The picture shows a partial albino male greater scaup that was shot off Fox Island in Lake Ontario on October 29, 1958. The plumage of this bird was pure white with the exception of faint brown flecking on the chin, cheek and forehead. The soft parts (feet and bill) were pink, but the brown pigment of the eyes was present.

Albinism or whiteness is caused by the absence of normal color pigments and is not common in most species of wildlife and very uncommon in this particular species of waterfowl.

Aha!

At a beagle club field trial in eastern Massachusetts a varying hare gave a pack of beagles, their handlers and the judges a warm surprise. Intentionally or otherwise, the harried hare led the whole group into a large and very lively nest of hornets.

Pity the penguin?

Wouldn't it be wonderful not to have to worry about colds and the 1,000 and one other diseases that affect man and most living things in temperate climates?

Well, the penguins of Antarctica have solved the problem. They have no known diseases and there are no harmful germs in their bodies. With this in mind, Dr. Paul R. Burkholder, Director of Research at the Brooklyn Botanic Garden, is now in Antarctica making collections of soils and lichens from exposed land areas and plankton from the sea in search for new antibiotics which may be helpful in controlling disease. Dr. Burkholder is of the opinion that the penguins' good health may be due in part to undiscovered antibiotic qualities found in their food—shrimp, that live on sea plankton, a microscopic marine growth.

Headquarters for the expedition will be Deception Island, where base and equipment are being furnished by the Argentine government. The U.S. Office of Naval Research is providing supplies and transportation.

Of course, there is always the possibility that penguins are blessed with freedom from disease as partial compensation for having to live in the desolate Antarctic wastes!

Future financing for wildlife

Recently a special survey was conducted by the International Association of Game, Fish and Conservation Commissioners to determine the need for new sources of revenue for fish and game departments to plan and implement adequate wildlife conservation programs. The survey consisted of tabulations of returns from questionnaires sent to 57 agencies representing 54 U.S. states and Canadian provinces. Some of the salient facts resulting are summarized here and deserve thought by those who are responsible for future planning and management of our wildlife resources:

1. State wildlife agencies are supported primarily by sales of hunting, fishing and trapping licenses, with other sources accounting for only about 10 per cent of the income.

2. An average of the departments indicates 40 per cent more money could be put to effective use in present programs. Considering future plans in relation to increasing costs, 60 per cent more money than in present budgets will be needed in five years, 90 per cent more in 10 years, and 130 per cent in 20 years. "A substantial amount of this new money will come from license sales to an increasing number of people who will use the out-of-doors even more," the report stated.

3. Fourteen agencies indicated that they had reached the present limit of expansion of license fees and others indicated license fees could not be raised appreciably without discriminating against a sizeable segment of the public.

4. The average annual expenditure of 54 agencies for wildlife work for the fiscal year ending June 30, 1958, was $2,646,445.

5. Thirty-five agencies reported increases in fish and game funds in the last two years.

6. Thirty-three departments were of the opinion that increased fees for some types of licenses would be warranted and acceptable by sportsmen.

7. Only 27 departments had suggestions for potential new sources of income other than license fees or Federal aid grants. The most popular included: Special fees for use of intensively managed conservation areas such as trout lakes, deer areas, etc.; license for recreational boats; tax on gasoline used in recreational motor boats; grants from general governmental funds; gifts or endowments from foundations; and sale of resources (timber, minerals and agricultural produce) from departmental lands.

Most state wildlife agencies are "self-supporting," sustained by license fees and sources of income other than appropriations from general tax revenue funds. This situation has worked both to advantage and disadvantage. Because game and fish funds are earmarked, wildlife agencies often are given a freer hand in administering programs than is true for many units of state governments. On the negative side, self-supporting agencies sometimes become governmental "orphans." The question sometimes arises as to whether or not general tax fund appropriations, which largely support other state resource functions such as forestry and agriculture, are worth a possible loss of present prerogatives and control. It is a fact that recreational interests usually are given less attention in state budgets than some other public programs such as education, highway construction, agriculture and the like.

The importance of other sources of income is problematical. Federal aid funds probably will be smaller in the next few years, when backlog Pittman-Robertson monies are used up, unless excise taxes are extended to sales of other items of equipment and, in the end, the same sportsmen still foot the bill. Some possibilities appear to exist in sale of products (minerals and timber) from state wildlife areas but serious consideration must always be given to whether such practices will damage the resources, or the use of them, for hunting and fishing purposes.

The future of perpetuating our wildlife resources for the enjoyment of all is at a critical stage of planning.

Airplane stocking

The Department's new airplane, a De Havilland Otter, was used for the first time this Fall in stocking remote Adirondack ponds and proved worthy of its reputation as an aerial truck for this type of work.

A total of 297 ponds in 11 counties were stocked with 484,780 trout weighing 8,626 pounds. The Board of Supervisors of Hamilton County paid chartered 'planes to plant 100 ponds in that county, as has been their practice for many years. The Otter was used in the planting of 197 ponds, an increase of 26 over the previous year. These ponds are mostly inaccessible to other means of stocking, but stocking by airplane has provided excellent fishing waters for those who will seek them out.

Maps are prepared for all areas where airplane stocking is to be done and Department personnel who are familiar with the area accompany each flight. In the Otter two men are required to transfer fish from the carrying tank to the dumping device, and one man with maps to act as "spotter" in locating the ponds. When chartered 'planes are used only the spotter goes along, as fish are dumped directly from the carrying tank by pulling a cord near the pilot's seat.—K. B. NICHOLS, *Supt. of Fish Culture*

Conifer Plantations

(*Continued from page* 20)

throated green and magnolia warblers. At the same time, openings attract edge or thicket birds like towhees, chipping sparrows, robins and yellowthroats.

Plantation openings of one-quarter to two acres were used rather extensively if they contained grass, bramble and other vegetation. Does and fawns used the meadow-like openings and cottontails occupied bramble openings permanently, if some usable woodchuck burrow or stonepile existed.

The kind of vegetation growing in the openings had considerable influence on wildlife use. The white-tailed deer used openings offering browse. Rabbits in Winter were most abundant in openings of sumac and bramble. During Summer months, grouse visited openings with thin cover and exposed mineral soil for dusting themselves. Aspen growth supported grouse and provided nesting sites for chickadees.

The introduction of black locust in some State reforestation plantings may have resulted in failure from the foresters' point of view, but it provided some good wildlife habitat. The locust developed openings at regular intervals. More important, the nitrogen-fixing properties of the locust stimulated a dense growth of grass and bramble. These furnished excellent food and cover areas for rabbits, grouse, deer and song birds. Chemical studies showed that a considerable difference existed in the quality of food produced under locust stands compared to that produced in old fields.

Pruning and thinning a plantation may enhance or damage its wildlife values. Row thinning and complete pruning of a plantation opens up the area to a point where effective wildlife cover is destroyed. Plantations so treated have been abandoned by deer and the area ruined for grouse. On the other hand, plantations that are not completely pruned or excessively thinned offer better wildlife cover than do unmanaged plantations.

Pruning and thinning affects the microclimate of a plantation as well. The author spent the coldest part of the Winter of 1956 making daily visits to an old pine plantation, part of which was pruned and thinned, the rest untouched. During stormy weather and in the coldest days, the deer bedded in the unmanaged portions. Although the snow was deeper there, the deer were sheltered better from the wind. As the weather warmed, the snow left the managed portion more rapidly than the unmanaged part. And with the ground free of snow and the Spring sun warming the south-facing slopes of the planting, the deer began to use the thinned area more and more for their bedding ground.

It seems to us that we've pointed out enough variables with respect to plantations and wildlife use to show that you can't lay down a lot of general rules as a guide to plantation management practices. But, the evidence is clear that a variety of situations or environments within a single plantation area enhances its value as wildlife habitat.

In summary, observations show that in New York State, at least, conifer plantations do support respectable populations of wildlife. Second, there is a wide range of differences between plantations and the environment they offer wildlife. Third, small plantings adjacent to food and cover make valuable additions to the habitat and are used by deer, grouse and rabbits but are of little consequence to small bird populations. Fourth, isolated small stands are of little value to wildlife, particularly after they have reached the 20-foot class. Fifth, large plantings, because they offer a variety of habitat situations, support a larger and more varied wildlife population per acre than do smaller plantations. Sixth, pure pine plantings are the poorest wildlife habitat while spruce, and plantings which include spruce as one of the species, hold the greatest variety of wildlife. Seventh, the number and kinds of openings and the management practices on a plantation all influence for better or for worse the wildlife values of the area.

Adirondack Chickadee

(*Continued from page* 22)

"plunk" of big woodpecker feet which we had been hearing all Winter. Glancing out, I really opened my eyes. I don't need to tell you that it was Sailor, with his old familiar air of expectancy, waiting for me to open the window and push a peanut underneath. As the storm window swung out he leaned way down until his beak nearly touched the tray, wings outspread for balance, in order to get a quicker glimpse of his breakfast—just as he had always done when fed in this manner. How could a tiny bird brain remember that routine through nearly a year of absenteeism? Habit? That long? He was sleek and plump and full of apparent joie de vivre, sure (and rightly so!) of his welcome. But where had that bird been, and why? To leave a dependable and varied food supply to which he had been accustomed for so many Winters seems a peculiar thing to do.

Two environmental factors may have been involved—clues for our fancied Mr. Holmes. First, the snow cover was less than usual, there being no more than 16 inches on the ground at any one time, which means that at many times during the Winter there were exposed patches of ground, especially on sunny hillsides. The average comparable figure for the preceding seven Winters was nearly 29 inches. Mr. Holmes may be able to make something of these figures but for me, since chickadees are not ground feeders, they have little importance. Temperatures were not unusually low, when compared with other Winters.

And second, a lake outlet which is within 200 feet of the house was subjected to treatment from the air with DDT (20 per cent, in oil) for black fly control, at two times during the previous Spring. Whether this spraying could have any bearing on the sudden break in routine, I am not qualified to judge, but since our other Winter birds were present in numbers which corresponded to the average, a negative answer seems to be indicated.

Sailor, I'm happy to say, is still present, behaviour normal, the where and why of his absence plaguing us no little bit. Possibly, because he had been working for the College of Forestry for seven long years, he simply felt he needed a sabbatic!

Moles and Shrews

(*Continued from page* 26)

of skulls of this little shrew have been recovered in owl pellets. The stomach of a rough-legged hawk contained 27 shrews of this species.

In New York we may look for this creature in the central and western counties, the lower Hudson Valley and Long Island. It appears to shun the Adirondacks and higher Catskills.

A ball of shredded leaves under a rock slab, stump, log or shallow tunnel provides for the several litters of four to six young. The youngsters may have a combined weight three times that of the nursing mother when they are weaned at three weeks. These shrews are sociable creatures, several adults having been found huddled together in the same nest, a situation that is not generally accredited to shrews. Their appetites are prodigious, captives eating the equivalent of their weight every twenty-four hours. Digestion, as with all shrews, is remarkably fast, the hard chitinous parts of insects passing through the digestive tract in less than two hours.

SHORT-TAILED SHREW (*Blarina brevicauda*). 4½ to 5 inches: Of all our shrews, this is the best known and the one that is most often seen. It is often thought to be a mole, but the lack of the

greatly enlarged forefeet will serve to distinguish it from these burrowers. Generally slate-colored, with an inch long tail, it is the most powerful of our eastern shrews. Occurring from the tidal flats of eastern Long Island to the stunted growth of our higher mountain peaks, it is not particular of its habitat, occupying dry woods and swampland alike. It is up and about at all hours and we have often seen it running about the snow below our bird feeders, picking up the scraps of suet and sunflower seeds. Since it is the species most commonly caught and left on the doorstep by tabby, I suspect this is the shrew most often seen. All predators do not discard it, for a red fox I examined had bolted five of these shrews almost entire. Snakes, weasels, hawks and owls all find them a delicacy.

This big shrew in turn is a fierce predator, often overcoming a larger field mouse with dispatch. In killing the larger prey, these shrews are aided by a toxic substance in the submaxillary glands, injected into the wound when the shrew bites its victim. This undoubtedly aids in immobolizing its prey. If this shrew were the size of a small dog, it might be one of the most feared of all mammals. The insatiable appetite of this animal is demonstrated by the fact that it can eat the equivalent of its own weight in a 24-hour period.

Several litters are produced during the warmer months, and the woods literally swarm with these creatures in some years. At other times they may be scarce, a reflection of the population cycles common to other small mammals and many game species.

Our State Forests

(*Continued from page* 28)

($3,500 to $4,000). These sales, therefore, go a long way toward cutting down the capital investment made on these lands. It's usual, too, for the sale to be confined to only 20-50 acres of forest, with all the remaining 950 acres growing trees for some later sale. Doesn't this look like good business?

So far, sales in District No. 1 have reached the figure of over 1¼ million feet of logs. In addition, more than 1,700 cords of pulpwood have been sold in the form of small material resulting from improvement cuttings. Several thousand highway guide posts have been sold, as well as approximately 10,000 posts furnished at actual cost for use by our own Bureau of Camps and Trails. Maybe these sales are insignificant, but to us Foresters it is a trend, a trend toward more and more sales as this material can find a place in our everyday economy.

How does the Department sell its timber, you may ask? Well, the machinery is all provided for in the law. Let's for example, take a tract of saleable timber in District No. 1. We measure, compute its volume, find out what is in large trees and what is in the smaller sizes. We then proceed to mark the trees to be cut, usually with orange paint. As the trees are marked they are tallied and at the completion of the marking we immediately know within reasonable limits how much of each species of timber we have. Then, depending on prevailing prices, we request the Department to advertise the sale, specifying exactly what is to be sold, how it is to be cut, etc. Local newspapers then advertise and we send out bid instructions to known operators in the vicinity of the sale. We usually indicate a day when all interested loggers may gather and look over the timber, after which they submit their bids to be opened at an announced future date. If the prices don't meet the estimate of the Forester, we can reject all bids—but this doesn't happen too often. Naturally, the sale is made to the highest bidder, providing he can comply with the contract.

Local sales under $100 can be made directly by the District office, but all others are open competitive bids. This provided adequate leeway at one time but due to inflation, it would be to the State's advantage if local sales could be made for material up to a minimum of $500. Today, with stumpage at $35-$40 per M feet, sales of $100 or less do not allow sufficient latitude to sell any appreciable amount of material.

One important factor that is bound to increase revenues from our State Forests is the forest inventory now being conducted on these lands. Underway in three Districts, it will soon be extended to the fourth. It uses the latest techniques such as aerial photo-interpretations. Based on the survey data secured thus far (on about 100,000 acres) it is certain that right now we have sizeable amounts of saleable material. In District No. 1 alone, it is estimated that there are 6 to 8 million feet of saleable sawlogs. Management plans being made for each forest unit will indicate how these stands will be cut, how much will be left to form the nucleus of another cutting some 12 to 15 years hence, and how these cuttings will be extended over a period of years to allow for a constant and increasing income to the State.

The practice of forestry is not a glamorous thing. Trees are established as seedlings, cultural operations are undertaken to improve existing stands and the layman sees little change except a lot of growing trees. The forester, on the other hand, sees accelerated growth, better quality material and many other multiple uses that the forests provide. Forestry operations by repeated cuttings improve wildlife conditions and today the more than a half million acres in State Forests provide one of the largest game reservoirs for public hunting in the State.

So take a close look at your State Forests! As young as this program is, a start is already underway to reap some of the long-term harvests so necessary in forest management. Any District Forester today, I'm sure, would appraise our State Forests as having a much greater potential dollar and cents value than the investment price. The ownership of a publicly-owned forest, as opposed to private ownership, goes on and on. Today our program is only 29 years old, but give us 80 or 100 years—I'm sure the professional forester will have proved beyond doubt that our State Forests are a "growing asset."

Finger Lakes pollution control

The New York State Water Pollution Control Board has adopted stiff standards to protect Finger Lakes waters from pollution in the future and to proceed with cleaning up existent problems of pollution and waste disposal.

Three of the lakes—Canandaigua, Keuka and Owasco—have been given a blanket "AA" classification that means the waters in these lakes must meet purity levels to permit human consumption. All impurities presently going into these lakes will have to be eliminated or treated.

Sections of Seneca and Cayuga lakes are also rated "AA", while other sections are classified "B." The latter rating requires that waters must be safe enough for swimming which would ban the presence of any untreated waste materials.

There are many tributaries flowing into the Finger Lakes and all of these have been classified and given ratings that will, at least, require the proper treatment of any contaminants dumped into them.

A program is already being developed which will spell out in detail the steps that will have to be taken by municipalities, industry, cottage owners and those using the water resources of this Finger Lakes region to comply with the new regulations.

The Finger Lakes region has been renowned for its natural beauty, enhanced primarily by the lakes. It looks as if, with this realistic approach, that generations to come will also be able to enjoy it and its wonderful recreational potential.

Deer yard

As the mid-winter season approaches, the term "deer yard" is common among game biologists and sportsmen concerned with the welfare of deer during the period of deep snows and sub-zero temperatures.

Few people see these yards and there is often misunderstanding as to how the animals use them. As the snow deepens, the deer in a particular range will gather in the lowlands, usually in stands of conifers where they are more sheltered from the wintry blasts. Taking the course of least resistance, the animals establish a network of "trails" in their concentration areas or "yards." As the snow gets deeper, they seldom stray from them and almost all of their feeding is done along such trails.

The picture shows a well used trail in a "deer yard" in the Moose River section of the Adirondacks. The snow is 30 inches deep or up to the belly of an average deer. Notice the heavily browsed young trees in the foreground and the broken branches along the path, while off the path (out of reach) the twigs are untouched. This is a good illustration of the fact that although browse may be available in the "yard," deer may starve if it is out of their travel lane reach.

Whoopers

Man, in his headlong dash toward whatever goals civilization holds, has doomed quite a few species of wildlife to ultimate extinction. Nevertheless, in recent years, he has made a real effort to maintain certain species that are still with us but hanging by a very thin thread.

One of the most earnest and publicized efforts has been to maintain and even increase the whooping crane population. This year, 16 wild whooping cranes including 5 young-of-the-year arrived at the Aransas National Wildlife Refuge in Texas during the annual Fall migration. Two other "baby" whoopers were reported en route, lending hope that the remnant flock of the continent's largest bird may be on the increase. Whooping cranes have produced more than 5 young on only three occasions during the last 20 years. Authentic reports of whoopers have come in this Fall from Montana and Missouri, outside the usual migration route. If the remaining cranes do not suffer losses en route, the flock now may exceed 32 birds.

Lake Champlain smelt

Most anyone, who has journeyed along Lake Champlain in the dead of Winter, has been impressed with the "villages of ice shanties" along the shoreline. The inhabitants of these shanties are interested in catching smelt—lots of them.

To secure information on this important fishery and thus provide for proper regulation and management, the Conservation Department's fisheries biologists have been carrying on Winter surveys there since 1948. In fact, early surveys go back as far as 1929. A summary of their finding provides some interesting highlights.

Two major races of smelt inhabit Lake Champlain and are referred to as the large race and the small race. Smelt fishing success varies from year to year, an important factor being the adequacy of ice cover. Poor ice, as in 1953, can drop the catch to almost nothing. Although fewer fish are being caught per fisherman nowadays, the catch is more widely distributed over an ever-increasing number of fishermen. Data indicates the over-all catch has remained reasonably constant over the years. Less fish are reaching the market than in the old days because more fishermen and their friends are utilizing their catch for individual consumption. Home freezers undoubtedly have influenced this trend.

The reproductive rate, growth rate and harvest rate of both races would indicate that present regulations on this fishery are adequate to maintain it.

"So big"

The National Wildlife Federation admits that the ability of some people, especially anglers and hunters, to over estimate the weight of fish and wildlife is well known. A sportsmen's club in Pennsylvania, however, proved the point. A live black bear weight-guessing contest was conducted to raise funds for a game-feeding project. The highest guess submitted was 1,650 pounds, while many estimated the bear weighed as much as 700 pounds. Actual weight of the bear: 320½ pounds!

Special note

In the December-January issue we published a story "Settlers' Salt," illustrated, in part, by a fine portrait painting of Thomas K. Gale, Sr., a pioneer in the salt industry. Unfortunately, the artist's name did not reproduce clearly enough to be read—Lee S. Trimm, father of THE CONSERVATIONIST'S fine wildlife artist, H. Wayne Trimm. We think our readers will be interested to find there's something in heredity, after all.

How about hares

What's the difference between a rabbit and a hare? Does either of these animals ever go in the water? When the snowshoe rabbit changes color, does he turn white overnight or does he have to grow a whole new coat of fur?

Right now, let's go to the first question: What's the difference between a rabbit and a hare? Well, the young of rabbits are born blind and without any fur. But young hares have their eyes open at birth, and they also have a warm fur coat. In other words, a new-born hare has hair and eyes open and a rabbit doesn't. That sounds simple enough, but what confuses many people is the fact that one of our long-eared friends of the rodent world goes by both names. He's called the snowshoe rabbit or varying hare. By now, he probably isn't too sure himself which he is, but actually, the snowshoe rabbit is a hare. Twice a year, he changes color. For six months, his coat is a reddish brown. Then, he turns to white, which is why he's often called the varying hare.

Contrary to what most people think, the fur itself does not change color. In the Fall, the brown hairs simply fall out —not all at once, of course—and they're replaced by a new growth of white hair. This variation in the snowshoe rabbit's coloring is for the animal's protection, to make him blend in with his background, Winter or Summer. And it brings up a rather interesting question: Is the snowshoe rabbit aware of the change in his coloration? At least one naturalist says, yes, he probably is! To prove his point, this gentleman writes, and we quote: "In early Spring, when the hares are still white and the snow is in patches on the ground, they invariably squat on the snow."

Other naturalists, however—and they're probably in the majority—are not yet satisfied that the animals realize the protective value of their color and behave accordingly. But who knows? We may someday prove that the varying hare first has to find out what color he is today, before deciding whether to sit on the bare ground or on the snow!

One thing we do know about the snowshoe rabbit is that this fluffy thing that lives on land can, and sometimes does, go in the water. He may not like swimming, but he won't hesitate to jump in when it's necessary. One observer who spotted a snowshoe rabbit swimming across a 100-foot wide stream, described the scene this way: "A more ridiculous attempt at swimming," he wrote, "can scarcely be imagined. The animal literally hopped through the water, using only his hind legs, and kicking with such vigor that the whole forward part of his body was raised above the surface of the water at each stroke." Well, maybe the poor critter would never win any blue ribbons for his form, but at least he got across the stream!

On land, the snowshoe rabbit is about as fast and sure of himself as any animal can be. He can leap up to ten feet in a single bound—and can make four bounds a second! That figures out to about 26 miles an hour, which isn't bad for such a little fellow. Even when the ground is covered with snow, and most of the other animals in our woods have trouble getting around, the snowshoe rabbit can skim along like greased lightning. His enormous and heavily furred hind feet act like snowshoes, to keep him from breaking through the crust on the snowdrifts.

Essentially a creature of the woods, the snowshoe rabbit has always done well in our Catskills, Adirondacks and a few other parts of the Empire State. Now that other areas in the State are being reforested, game biologists in the Conservation Department are busy re-introducing the species to these sections. So far, the Department has live-trapped and transferred some 1,500 snowshoe rabbits in the past several years. The animals have been moved to parts of 19 different counties, where they'll have a chance to build up a sizeable population of hares—to the joy of hunters.

Hunting snowshoe rabbits is great sport, we're told. And for those who enjoy our wildlife more just by looking, they say there aren't many sights that can compare with the strange and beautiful pantomime of snowshoe rabbits playing in the moonlight. As Ernest Thompson Seton once said: "Cross a snowdrift with a little brown hare—and you have the snowshoe rabbit. A wonderful creature!" We're glad to say it's one of our many New York State animals.—ROSEMARY E. CLARKE, *N.Y.S. Radio Bureau*

New edition

The new 1958 edition of "Records of North American Big Game," a book of the Boone and Crockett Club, compiled by the Committee on Records, is now available. The volume contains about 70 superb photographs and the measurements of over 2,500 trophies. The 1952 edition listed only 800 trophies. There are 14 new world's records in the revised lists. The 1952 book, by the way, is out of print, and like the 1932 and 1939 editions it is selling at a premium when used copies are available.

This is a limited edition and will not be reprinted. It is available at $10 per copy, from the Club, 5 Tudor City Place, New York City 17.

Research rabbits

A management technique for cottontail rabbits is the establishment of artificial dens, especially in localities where woodchuck burrows and other shelter are scarce.

Research personnel at the Delmar Game Farm established four artificial dens near the headquarters and rabbits used them occasionally during the Winter. Nevertheless, during the extreme cold weather and deep snow period the cottontails moved into a drain pipe from the laboratory that carried off excess water. The water kept the pipe open and warm. Apparently the bunnies would rather have an occasional wet foot than stay in the colder artificial dens.

Deer cafeteria

In 1956, deer starvation in parts of Chenango County was serious. Conservation Department crews found a dead deer every 50 yards along one wood edge that adjoined open lands. At that time, the woods had very little in the way of browse within reach of deer.

During the Spring of 1957, Department crews came in and cut soft maple in such a manner that the trees were felled, leaving a strip of bark to the stump attached. The trees kept growing—in a horizontal direction and around the stump dozens of sucker shoots have sprouted. In this manner a considerably increased food supply has been brought within reach of hungry deer.

Free protection

Rodents destroy millions of dollars worth of farm crops each year. The farmer who protects hawks and owls on his land is aiding in the control of these costly pests. Hawks perform guard duty during the day and the owls go on patrol at night.

Incident among archers

On a snowy December 2 last Fall, several hundred archers gathered at Howland's Island in Cayuga County to hunt deer. By noon, four nice bucks and one doe had been taken with many other deer seen and a few shot at. As the shadows began to stretch across the snow, an archer arrived at the headquarters check station with another deer. He spoke to the official at the check station, turned and left, leaving the deer lying in the snow. He had been hunting all day and finally spotted this deer, made a stalk and a good shot and killed it cleanly—his first deer! Then, when he approached the deer he found that it had been hit earlier; there was another arrow. What should he do? It would be easy to destroy the evidence of the first hit; hide the arrow beneath the snow. After all, *he* had killed this deer. Dressing it out carefully, he dragged the deer to the check station and left it there with the first archer's arrow. The archer who could match that arrow, he said, could claim the deer.

Soon a tired, disheartened archer came puffing over the hill, hard on the track of the deer he'd hit. He was sure that he would never see it again. Certainly, if someone else had killed it they would have taken it by now.

It was with great surprise and humility that he gazed upon "his" deer. And, by the standards of sportsmanship that prevails among most archers, this was true. They feel that the game belongs to the person scoring the first hit. It is nice to encounter such an attitude among hunters these days.—H. WAYNE TRIMM

The future in furs

The early settlers conquered a wilderness and set the stage for growth of the United States as a Nation by their quest for raw furs. In the Colonial Days it was the most valuable resource our new country had to offer.

Today that resource presents quite a different picture. The development of synthetic fibers—some that even simulate the texture and beauty of natural furs, and selling for a fraction of the price—has drastically reduced the demand for the natural product.

Nevertheless, Nature continues to provide fur-bearer populations and, for the lack of commercial harvest, some of these populations grow until they become a nuisance. Some succumb to disease—one of Nature's methods of controlling overabundant wildlife populations.

Such wildlife surpluses present the game manager or wildlife biologist with a tough problem. He is beset with requests to abate nuisances caused by overabundance, and it can be a costly process when it requires the services of a professional trapper to take care of numerous damage complaints. These vary from skunks in cellars to beaver colonies flooding valuable agricultural or timber lands. Each year there is hope that a new fashion trend or new economic use will provide a market to permit the harvest of this potentially valuable fur crop but each year the market seems to become less stable, except for a very few species.

Some furs, such as the red and gray fox, opossum and squirrel have no value at all. Others such as the weasel and skunk are unpredictable. Old standbys like the raccoon, mink, muskrat and beaver are in fair demand but each year finds pelt prices dropping. All except mink have dropped to the point where it is hardly worth the professional trapper's time to catch the animal, properly prepare the skin and then try to market it at a reasonable profit. He can usually find more profitable ways of spending his time.

More lenient seasons and catch limits (in some cases none at all) are being tried. There is still some interest in sport hunting for such species as the fox and raccoon, but this too seems to be on the decline. Fur garment manufacturers have dyed, sheared, plucked, styled and re-styled furs to make them more attractive but the market continues to decline. Processing costs of working with natural furs are substantially greater than in working with textiles and the final price to consumer is a big factor in sales.

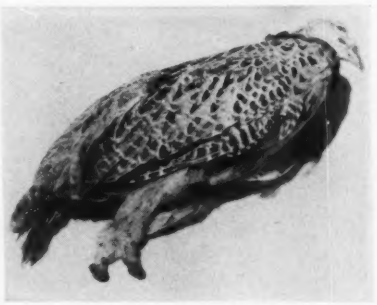
In our fast moving technological age assets can become a liability overnight and so it seems with fur at the present time. By the same token, the process can be reversed and with furs it depends much on milady's taste and style for tomorrow.—E. A. WESTERVELT

Adirondack bibliography

"The Adirondack Bibliography," a list of 7,539 separate entries fully describing the books, pamphlets and articles published up to 1956 about the Adirondack region, is available from the Executive Secretary, Adirondack Mountain Club, (publishers) Gabriels, or from New York University (N.Y.U. Press, printers) or at book stores at $10.

"Among the aims of the Adirondack Mountain Club," A. Tylor Ranger, club president, said in announcing the publication, "is the collecting of data concerning scenery, history, botany, geology, forestry, fish and game in the Adirondacks. The work started originally as an attempt to bring up to date the bibliography that Alfred Donaldson included in his history of the Adirondacks, published in 1921. The project grew far beyond the scope of the Donaldson work."

The 450-page book has been nine years in preparation, is edited by Dorothy A. Plum, Vassar College bibliographer, and compiled by a 14-member committee of the Club. Many previously unrecorded items about the Adirondacks are included.



Handicapped pheasant

While hunting in Onondaga County, a hunter's dog brought back to him a hen pheasant that had been shot by some misguided hunter. The bird had been dead only a short time and on examination it was found to be legless. Apparently the bird had been clipped by a mowing machine during the Summer and both legs had been cut off. The bird had managed to heal both stumps, and, using its tail as partial support, was able to move about well enough to survive—at least it was in good flesh when found.

Teen-agers

What does a teen-age boy like to do most? The Boy Scouts of America, with the assistance of the Survey Research Center at the University of Michigan, undertook a study to determine the answer. The results are interesting.

A sample, representative of all boys 14 to 16 years old, in the seventh to twelfth grades, was interviewed and 31 different leisure-time interests listed with the percentages of those who participated.

Outdoor participation sports ranked high. Some 81 per cent of all boys went *fishing!* In order of actual participation, the more important outdoor recreation activities were: Swimming (87 per cent); baseball (85 per cent); fishing (81 per cent); basketball (81 per cent); football (73 per cent); hunting and shooting (68 per cent); camping and hiking (60 per cent); boating, canoeing and sailing (53 per cent). Other activities ranked well under these.

It seems significant with respect to its intrinsic appeal that fishing, without benefit of promotion, ranked so near the top. By contrast, most other activities enjoy intensive, widespread, local organization and encouragement as, for instance, Little League baseball.

For those who are working with youngsters and who may be interested in the details of the study, the report "A Study of Adolescent Boys," (No. 3091) is available at $2 per copy from Boy Scouts of America, New Brunswick, N. J.

Size of trout

Trout in some streams live, spawn and die without reaching a size of seven inches. A five-year-old fish, for example, might be only five inches long. Usual reason is lack of living space or sufficient feed.

Scouts and the FPA

The Onondaga Council of Boy Scouts of America recently purchased a 5,200-acre tract of land near Sabattis in the Adirondacks. One of their first moves was to sign the property up under the State Forest Practice Act. The land lies in Forest Districts 7 and 10, and already a joint meeting between foresters of the two districts and Scout Council representatives has developed a long range plan of management.

The Scout Council will certainly benefit financially from such a plan, especially in future years. Meantime, the plan can provide many projects in resource management and be a field laboratory and proving ground. Here is a sound way of getting conservation education across to a large number of future citizens.

Canadian visitors

During the month of September, the District Game Manager at Syracuse, and his staff played host to a group of eight Canadian Foresters and Game Biologists from the Province of Ontario. The guests were especially interested in New York's approach to wetlands development and reforestation.

They toured Howland's Island Game Management Area to inspect the diving duck propagation program, and they visited the Three Rivers Game Management Area where intensive management covers a host of multiple-use programs. The Tioughnioga Game Management Area and adjoining Reforestation Areas gave the visitors an idea of our reforestation program, forestry management and the inter-relationship between good forestry and good wildlife management. The Canadians are making plans to greatly increase reforestation work.

The Montezuma Federal Wildlife Refuge which the Canadians included in their tour of inspection gave the visitors an example of the Federal waterfowl management system in the United States.

Evenings were taken up by "cracker barrel" discussions and we learned of approaches to mutual problems that the Canadians were making. In Ontario, all conservation personnel participate in law enforcement but no one devotes full time to it. Individuals entering the Conservation Service receive six months of specialized training.

Along game management lines, they start their muskrat season in November with other fur-bearer seasons, figuring there is not enough variation in pelt price from November to March to warrant losing part of the crop through over-winter losses. Skunks and racoons have a year 'round open season because of their overabundance and the decreasing demand for them. Beaver have become their number one nuisance problem and they are attempting to handle it by allowing landowners suffering damage to trap offending animals and to sell the pelts providing they are tagged by an officer.

At trip's end both Canadians and Americans felt the exchange of ideas was most worthwhile and each could progress with his work a little more efficiently. — A. TAORMINA, *District Game Manager*

Pincushions

A porcupine doesn't roll itself into a ball when danger threatens; it simply arches its back and hides its nose between the two fore paws, presenting a formidable pincushion to troublemakers.

Poaching penalty

The laws of Pennsylvania provide for the confiscation of vehicles used in committing fish and game law violations. The cars are sold along with other confiscated equipment at public auction.

Letters to the Editor

Largest park

Dear Sir: As a subscriber to your delightful magazine, and as an owner of a camp (private) on Raquette Lake for the last 30 years, please put me straight.

The article on State Parks, pg. 16 in Oct.-Nov., 1958 issue says that Allegany is the largest State park in New York.

I have always bragged about the Adirondack State Park as the largest such park in the *U.S.*—let alone New York.

Is Mr. Huttleston correct, or can I still brag about the 10,000 square miles (approx.) of the Adirondack Preserve?

L. B. Platt, New York

• *Al. Bromley, Editor of* THE CONSERVATIONIST, *has asked me to reply directly to your letter of November 6th in which you question my designation of Allegany as the largest State park. There is no question about the greater area of the Forest Preserve. Although less than half of the area within the Blue Line is State-owned, the 4,000 square miles of publicly-owned lands in the Preserve would still dwarf Allegany State Park in area.*

However, we do not consider the Adirondack Preserve as a State park. It is not under the jurisdiction of any of the regional State Park Commissions, which have authority under the law to establish "state parks." In fact, the Division of Parks as a whole, has no jurisidiction in the Forest Preserve and no right to consider the area as a State park if we wanted to. Beyond this, the constitional restrictions on the Forest Preserve area are such that the type of recreational development common to and popularly associated with State parks would be impossible.

I think the Adirondack Preserve properly deserves the reputation as the largest State-owned Preserve, but it is not a State park in the sense that the eighty-five areas under our jurisdiction are State parks.—L. L. Huttleston, Assistant Director of State Parks

Patience, Watson

Editor: Conservation is a very broad term and I believe that all our people, young and otherwise, should be acquainted with its scope. Our State does such a fine job at it that by and large we should all know about it and appreciate the job being done.

I hear many complaints about the lack of conservation of our deer herds, especially in the Southern Tier, and I have to admit that the doe seasons have seriously depleted the herds there. I get many grievances from archers who would like more areas set aside for archery only. The weekenders complain that those who own clubs or camps are shooting illegal venison and other game but are never checked at dinner time. The consensus seems to be that there are too many violators and not enough Protectors.

To one and all I say: "Patience, Watson, patience! New York is doing a grand job and eventually we shall get balance. If you don't believe, just travel other States and make up your own mind!"

G. W. MacLaughlin, Principal,
West Genesee Central School,
Camillus

• *There is, as the critics say, a very great deal that needs doing to improve the conservation scene here in New York, but as you pointed out, we're not too bad off in contrast to some of our neighboring states and we're certainly making progress, though admittedly too slow.*

It is nice, however, to hear from someone who has been around enough to appreciate the wealth of natural resources that we do have here, and the fact that many are conscientiously trying to do a good job to conserve them.—Editor

Clean sweep

Dear Editor: Following is a brief summary of four cases we recently settled in regard to the illegal taking of two deer in Allegany State Park:

While working in the vicinity of Allegany last Fall on October 4, I was notified by a member of the Olean Police Department that a Game Protector was needed in Salamanca in regard to a train striking a car containing portions of deer. In Salamanca, I was informed as to what had taken place and upon interrogation of the two men who had stayed with the car, I found that there were two other men involved in the illegal taking of two deer in Allegany State Park.

Returning to the scene of the auto-train collision, I picked up the unusable portions of the deer which the four men involved had been on their way to dispose of when their auto was struck by the train. We settled with Felix Miller of Limestone, N.Y. and William Christjohn of Smethport, Pa. for $102.50 each, that evening. Later the same evening we apprehended Earl Snyder of Salamanca, another of the four persons involved, and made arrangements for him to make his settlement the following Tuesday. He appeared, when scheduled, before the local Justice of Peace and paid $102.50 also. The following day, the last of the four men involved, Robert Boser, of Salamanca, appeared and settled for $102.50, making the total penalty involved $410.

Robert McNamara,
Game Protector, Salamanca

• *Very expensive deer when the cost of the car is added.—Editor*

Pro-S

Dear Sir: In the December-January issue of THE CONSERVATIONIST, Dorian St. George points out that he killed a snake with a grouse egg in its stomach, apparently after fighting off the mother bird for its meal. Exactly what he was trying to prove I don't understand. The snake had a right to eat just as much as any bird or mammal, and killing it doesn't save the unborn bird.

Why can't people leave situations like this *alone?*

When I see a hawk killing a snake, do I have the right to break Nature's law of survival?

I guess I am slightly "pro-snake" myself. but that does not give me or anyone else the right to do things like this.

John J. Mallia, Amsterdam

• *St. George appears to have been "pro-grouse."—Editor*

A mouthful

Dear Sir: Reading "The Back of The Book" and "Letters to the Editor" in THE CONSERVATIONIST always puts me in one of those "That reminds me" moods and here goes with a snake story inspired by one in the last issue.

Several years ago, while pheasant hunting near Millbrook, (New York) I cut through a strip of woods between two fields. As I stepped over a small log, I heard faint high-pitched squeals and thought that my foot had disturbed a nest of small mice or wood shrews. On looking down toward the sound, I saw that my right foot had pinned down a small ribbon snake that had a rather good-

sized wood frog in his mouth by one hind leg. The snake was about a foot or fourteen inches long and he had the frog's leg swallowed right up to his crotch, and there he apparently had to stop.

The squeaks or squeals were coming from the unhappy frog and he sure was trying his hardest to hop off with his one free leg but he was getting nowhere fast. The leaves and leafmould were soft and I hadn't hurt the snake any, so I stepped back to watch the struggle for a minute or two. I am familiar with the fact that some snakes can expand their jaws to a point where they can swallow an object larger around than their own body, but this was a skinny little snake and he had about all he could handle with just one leg of the frog. With the other free leg sticking out at one side of his mouth and the larger body out the other side it looked to me to have reached a stalemate pro tem. Obviously the snake couldn't swallow any further with the frog in that position and the frog's struggles were equally ineffective as far as getting away was concerned. Fate seemed to have cast me in the role of umpire or referee, so I decided to separate the contestants and call it a draw.

Taking Mr. Snake in one hand and Mr. Frog in the other, I pulled the frog's leg out of the snake's mouth as gently as possible. The little old snake held on until the last toe came free and the frog's leg looked a bit the worse for wear but not too bad considering. I then released the snake with an admonition not to bite off more than he could swallow, carried the frog on for a hundred yards or so and set him free in the hollow of an old decayed stump with a warning to watch his step in the future. Of course, it's questionable whether either of them took my advice to heart but I have often wondered what the outcome would have been if I had not interfered.

C. Albert Jacob, Jr., Scarsdale

Dan'l Boone

Sir: Bobcat shot with .22 rifle at 6:30 a.m. walking up road "Up Back," Lew Beach, Sullivan County, Catskill Park area.

Cat: 30 inches, about 30 pounds; female, lovely brown fur, black spots.

Madeline Kehr, New York City

Yew

Dear Sir: Do you know what happened to the ground hemlock (Canadian yew)? When I first started hunting 20 years ago, it was very plentiful on knolls in low ground in balsam thickets. Deer wintered in these thickets and ate practically nothing else. They could always stay under cover in these yards and have plenty to eat. The closer the hemlock was browsed, the better it grew until the ground was completely covered. It has 99 per cent disappeared in this area (Twp. 15, south of Indian Lake). Now our deer are forced to go out into deep snow for good browse like soft maple, etc. Of course, they use most of the energy in their food just getting to it, hence, they get very run down by March and may die in April if Spring comes late.

Is anything being done to combat the wooly aphid (alias balsam fir louse)? The balsams here are dying at a terrific rate. I predict that in another 20 years there will be no more balsam thickets in our swampland. Then the deer's Winter house will be gone as well as his food. There is a tremendous amount of wonderful deer food in our swamplands since the hurricane (1950) but in February and March the briars and small brush, etc. hold the snow up to depths of three and four feet (well over a deer's back), practically an impossible task for deer to get through!

Seems to me we should work to re-establish native trees and shrubs instead of aliens. Most of our tree diseases come imported on some foreign import and then attack native trees which cannot fight them. It could take hundreds of years, for instance, for a balsam strain to develop which could successfully live with the woolly aphid sapping the pitch out of it.

Reforestation is a remarkable and wonderful thing to behold but why not with native growth instead of larch Norway pine, etc. Ever try to sell a stick of this crumbly wood? Ever see animals or birds eat any of it?

Can you tell me how a salmon 15" long got into Indian River east of the village? I saw one caught there last Summer.

Erwin E. Virgil, Indian Lake

• *I believe over-browsing by deer is probably the main reason for the present scarcity of ground hemlock (or Canada yew). The shrub is found throughout New York State, growing in moist, shady spots. It usually grows in clumps, some of which may be quite extensive. Many of the areas where it was quite plentiful in the past have become wintering areas for a growing deer herd. A preferred Winter food of deer, they browse it heavily to the extent that the whole plant may be destroyed. The same thing has happened to reproduction of hemlock, cedar, balsam and some hardwoods in areas where a deer population is too great for the Winter carrying capacity of the land.*

The woolly aphid (or balsam fir louse) is an accidental import from Europe that we could do without. It occurs throughout the Northeastern United States and Southeastern Canada. Its attack on small or large balsams can end in destruction or serious damage to the tree. In the mid-30's, when the pest was first detected in the Adirondacks, the State embarked on a control program but it was learned that the pest was so widespread in the Northeast, control was deemed quite impossible. Nature's own control seems to be the only answer at present—temperatures of –30° F will kill practically all the larvae. Individual trees can be protected by an oil spray of a strength of one part to 25 parts water or a lime sulphur spray of 1 part to 20 parts water applied early in the Spring.

As for reforestation, a substantial part of the species used are native; some imports (less bugs) are used in an attempt to establish species resistant to some native tree diseases or infestations. Most imports presently used, have certain economic assets in wood production. By the way, Norway pine originated in this country (Norway, Maine) not in Scandinavian Norway.

The 15" salmon from the Indian River is interesting. It's possible this fish may have come upstream from the Hudson. No stocking of this species has been done in the Indian.—Earl A. Westervelt

Redwoods

Dear Sir: First I would like to thank you, for taking note of my letter to you earlier this year about the wild turkey, I was fortunate enough to spot in the Catskills.

Being interested in trees particularly those which I have and will do well in New York State now and for future needs, I have what might be called a small experimental garden. Comparison of different conifers that are standard species and those of exotic origin from western United States and the Orient, all find their place here. Several articles on the Metasequoia, ("Dawn-Redwood") have appeared in THE CONSERVATIONIST. One article which information I have used and relayed to others appeared several years ago, now I notice going back this year the Feb.-March, 1958 issue has a letter about the Metasequoia. With all of this increased interest in this species I thought I'd like to pass along what information I have from several sightings of (unusually large) for their age, species here in Westchester. Right here in Ardsley, one of our townspeople owns a Metasequoia of at least 12 ft. plus size. Another such tree is growing in Hartsdale. In a nursery. This I would estimate at close to 15 ft. Smaller sizes 4 to 5 ft. are doing quite well here in this nursery. One of which I purchased. The tree's ability to grow in many different soil types and quickly form new roots amazed me. This Summer I saw one in the Bayard-Cutting Arboretum, of splendid shape and fullness. As a resident of New York State most of my life, a member of the American Forestry Association, a person interested in the true education of conservation in our State to the young and old alike, I would certainly recommend that more be said about such spots as the Bayard-Cutting Arboretum. It is accessible to a large portion of the population of our State being located in Metropolitan New York City.

William J. Moran, Ardsley

Russian conservationist

Dear Editor: Congratulations on publishing the article on "Protection of Nature in the U. S. S. R.," in the Oct.-Nov. CONSERVATIONIST. Should your readers be interested in Prof. Dementiev, its author, herewith a photo that I took of him in Helsinki, Finland, early this June.

The U. S. S. R. has had the usual pattern of uncontrolled exploitation, then negative controls (restrictive measures, such as closed seasons), then a recent rapid growth of positive measures (nature education, special preserves, etc.). The major initial upsurge in positive measures began later in the U. S. S. R. than in some other parts of the world. It appears that the economic side of wildlife values gets the most attention in the U. S. S. R., even today. That is, studies of direct utilization of a species, or what to do about any conflict between its and man's activities. And, of course, there have been the usual transplantings of native species and introduction of additional ones.

To take one small segment of the over-all picture, let's compare Russian and American ornithology. The Russians write at length on relations of birds to agriculture, the harvest of sea-bird eggs, and so on. They also are up-to-the-minute in matters of classification but, as yet, not very strong in most other matters. In the U. S., dominance of the economic phase—in the narrow sense—is past history. It still has its place, but we also devote much study to physiology, breeding biology, population dynamics, behavior, classification, and a vast number of other topics. We have numerous journals devoted exclusively to ornithology; the Russians still have none.

Ralph S. Palmer,
State Zoologist, N.Y.S. Museum
and Science Service, Albany

Deer feet

Dear Sir: Would appreciate the following information: (1) Method used to preserve the hair on deer feet so they may be used for ornamental purposes (this would apply to hair left on skull when cutting antlers off also). (2) Buck deer killed this Fall was full of lice. How would deer become infested and how, if ever, would they rid themselves of the pesky things?

I think I read something about deer lice in one of my back issues of THE CONSERVATIONIST, but am unable to find it now. Am an avid reader of your magazine and hope to remain so for many years to come.

Walter W. Onian, New Hartford

• *First of all, let's take the problem of the deer feet. The best thing to do is to skin the foot down to the hoof, salt the inside of the skin well and then have a taxidermist tan it the way a deer scalp is for mounting. This is fairly expensive, but it is worth it in the long run. In order to preserve a heavy skin well it should be tanned by a professional. Otherwise it is much more subject to rot and insect damage. A person can do the job at home but it involves many expensive and dangerous chemicals that require special working conditions and containers. In other words, to be set up for home tanning would involve more expense than a set of deer feet are worth.*

Secondly, you are right about some information about deer lice being in the magazine. It was an answer to a letter that appeared on page 44 of the February-March, 1958 issue. These "lice," more properly called louse flies or keds, are wingless in the parasitic stage. These parasites frequently infest deer, but appear to do no harm—nor will they bother humans.—H. Wayne Trimm

"News"

Dear Editor: When man bites dog—that's news, but when deer chases dog, that's more than news.

To prove that it happens, here is a picture that was taken not too long ago at Brisben, in the area where we had the deer starvation episode a couple of years ago.

Paul W. Grouch, Oxford

Verdict

Dear Sir: The snow storm that had wreaked havoc throughout the central part of New York State in March of 1957 had finally subsided. Several days of continual snowing and high winds had laid a blanket of snow two to three feet deep in most places in Onondaga County. The little Village of Pompey and surrounding farm land was no exception as Harold Crawford went about his routine chores on his small farm off Route 20 in the Pompey area.

That morning he had been bothered for several hours by the continual yapping and barking of dogs, coming from a small wooded area on his farm, and he finally decided to investigate. Taking his shotgun and dog, he started for the wooded section about one-eighth mile from his home. It didn't take long to see what was wrong as he approached. Three dogs had a doe deer cornered in the deep snow and they were literally tearing her apart at the flanks.

Harold picked up a good-sized stick and wielding it over his head he shouted, trying to chase the dogs from the deer. But they were beyond any command for they had tasted blood. Snarling, they turned on Harold, who dropped his stick and shot the two lead dogs. The third dog took off over the hill.

Three days later, Harold was arrested on the charge of cruelty to animals in the killing of two dogs, and stood trial on this charge on May 2, 1958 at Pompey Center. A jury of six men found Harold not guilty.

But a verdict of not guilty does not end a trial like this. Another Winter is coming. There will be more dogs running deer, and there will be other men put in Harold's position, subjecting themselves to arrest.

The sportsmen of Onondaga County and Madison County were vitally concerned with this case, and feel that our legislators should review the existing laws on dogs and make amendments where necessary to protect wildlife in these emergencies.

We also feel that the dog owners have a moral responsibility here, and they should be made to respect and abide by the laws of their locality in the harboring, licensing and curfew of dogs.

E. Pearson, President,
Onondaga County Federation
of Sportsmen's Clubs, Syracuse

• *I think you have your finger on the most important phase of this problem in the last paragraph of your letter in which you state that dog owners should feel a greater degree of responsibility in this matter. We could have all the laws in the world on the books but if the dog owners themselves fail to recognize what is going on and fail in exercising restraint and responsibility, we will still be as bad off as ever.—Editor*

Fishing Fourth Lake

Dear Sir: For many years there have been questions in the minds of some friends and myself regarding the changing fishing pattern in the Central Adirondacks. We have heard many supposed explanations of the reasons and I would finally like to get an official one. First, let me relate our experience.

Almost 30 years ago, we started going to the south shore of Fourth Lake (Fulton Chain) on vacations. We used to be able to troll in front of our camp around sundown and could be assured of at least two or three smallmouth bass strikes within 1½ hours. By approximately 1940 the bass dwindled and finally disappeared from the lake. One explanation was that the increased perch population destroyed the spawning. Another was that the lowering of the lake in the

Spring had the same effect.

Searching for a substitute pastime, we became educated to lake trout fishing, and for several years found this a very enjoyable and productive sport. About 1950, however, the lake trout also were reduced to a minimum. The natives still claim they are caught in the Spring and every now and then one reads about a large one being taken but it is obvious that the quantity of average-sized fish has been greatly reduced.

I then amused myself by fishing for brook trout in Pine Creek which was fairly rewarding until two years ago when this too petered out.

The only saving factor has been the introduction of rainbows into Fourth Lake. So far, however, this has not been too satisfying. I am a fair fisherman and when I spend three hours a day for three weeks and catch an average of five rainbows in the entire three-week period it is somewhat discouraging.

To rub salt in the wound there has been introduced some ridiculous little pest of the sunfish family which won't even allow one to dangle a hook off the shore and idly dream.

In other words, I think your magazine is excellent, and I don't doubt that your Department knows its business, but from my own experience in this one area it looks like a losing battle. We have decided that fishing in New York is a waste of time. Perhaps the fishing pressure makes this inevitable. Specifically, however, I would like to ask these questions:

1. What *did* happen to the bass and if this species were at home and propagated in these waters, why weren't they encouraged?
2. What happened to the lake trout and why weren't they encouraged?
3. Isn't it more difficult to maintain a species like the rainbow, which to my knowledge can never be expected to reproduce in these waters?
4. What is the point of introducing these pesty little rock bass(?) which never seem to grow more than 5 inches long even after being in there for about 3 years?
5. What happened that the brookies suddenly disappeared from Pine Creek after being consistent inhabitants for so many years?

If you can answer the above, my friends and myself will finally be able to cease theorizing.

Howard Dean, Malverne, L. I.

• Your first question was what happened to the smallmouth bass fishing in the lake. Your information coincides with ours. Fourth Lake produced good bass fishing until about 1940 and then became progressively poorer (I fished it as a "kid" when it was good). Unfortunately we didn't have the various fisheries districts in operation in the State at that time to obtain the necessary pertinent data as to why the bass population decreased and the fishing fell off. We do know bass was an introduced species. We also know that very often when a new species of fish is introduced into a body of water, it will do exceptionally well for a period of years and then gradually decrease until it is rather scarce or even non-existent in that water. There are other lakes in the Adirondacks that have a similar smallmouth bass history to Fourth Lake. We know that in most waters when smallmouth bass become well established, stocking of bass is a waste of time and money. Also, stocking of bass has been tried and proved unsuccessful in some Adirondack lakes with a bass history similar to Fourth Lake.

This office opened in December, 1950 and is responsible for the waters in approximately six counties. In 1954, we surveyed Fourth Lake at the request of interested sportsmen to see if we could improve the fishing. We were well aware of the past history of bass fishing and seriously considered trying an experimental bass stocking. Possibly it would have helped although such has not been the case in some other waters. If bass were stocked, they would not have reached legal size until 1958 or 1959 even if they prospered (it takes 4-5 years for a smallmouth bass to reach legal size in most of our colder waters). Also, many anglers were primarily interested in trying to provide trout fishing in Fourth Lake.

This brings up another of your questions, "Isn't it more difficult to maintain a species like the rainbow, which to my knowledge can never be expected to reproduce in these waters?"

Rainbow trout stocking was tried experimentally after our survey. The results to date have been very encouraging and large numbers have been caught up to 19 inches in length with one 4¾ pound and one 6-pounder being reported caught. Many others have undoubtedly been caught that we haven't heard of. Last Spring I observed several female fish digging their redds (holes in the gravel for their spawn) and the eggs being spawned and fertilized. It is too early yet to predict how permanent the good rainbow fishing will be. We hope there will be sufficient natural spawning to eventually maintain the rainbow trout fishing without help of stocking. However, stocking will be continued until we find it is not needed or not producing satisfactory results. Several times last Summer our crew of three men had the opportunity to fish Fourth Lake. We fished after work in the evening from about 7:30 to 9:30 and never failed to catch from 10 to 30 or more rainbows from 10" to 19" in length. Sometimes they rose readily to a large dry fly, but more often we trolled quite rapidly with a fly rod and any small wet fly. Earlier in the Spring they hit spinning lures good. I'm sorry your fishing wasn't up to expectations last year and sincerely hope the rainbow fishing in Fourth Lake remains as good or gets better and you are able to enjoy it.

Another of your questions mentioned, "What happened to the lake trout and why weren't they encouraged?" Lake trout are still present in fair numbers in Fourth Lake and some very good catches were made last year. However, the available lake trout population is being fished at present by a much larger number of anglers with better gear than was the case ten or more years ago! Lake trout are a slow-growing fish in most of our Adirondack lakes and it takes several years for them to reach legal size after stocking (Fourth Lake has received and still receives a heavy stocking of lake trout each year). In the past, light fishing pressure enabled most anglers to have a good chance at making a good catch. Any lake can only produce a certain poundage of fish each year. In Fourth Lake the poundage of lake trout is being distributed among an ever-increasing number of anglers.

Another of your questions was, "What is the point of introducing these pesty little rock bass?" A good question. They weren't introduced by the Conservation Department. Who introduced them? We don't know. They don't belong in Fourth Lake and the culprit would be liable for a fine for stocking without a permit if we could ever locate him. Much of our once good fishing has been ruined by such inadvertent stocking of fish.

I'm sorry I can't answer your question on Pine Creek. We can't locate any water in that area named Pine Creek and must have it listed under another name or as an unnamed stream. If you would let me know its location, I may be able to answer your question. —Wm. A. Pearce, Aquatic Biologist

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Albino squirrel

Dear Sir: Enclosed is a picture of an albino gray squirrel I shot in the month of October, 1958. It was (as you can see in the picture) of average size, and had pink eyes. How rare are they or are they a rarity? I have heard of albino deer but never a squirrel, also I would like to know if there was ever an albino bear recorded. Thank you.

Jerry Wolf, Marilla

• The gray squirrel is one species in which albinism is at least occasional. About the same degree of incidence, as for woodchucks.

The squirrel you have taken is a pure albino—the eyes have no pigment and are pink.

Albinism, or the lack of normal color pigment, varies in occurrence with different species of birds and animals. Often it is partial and the bird or animal will be mottled with white, as is quite often the case in white-tailed deer.

We have no records of albino black bear and I'm sure such a specimen would be considered a genuine "rarity." An albino crow would be in the same category.—Earl A. Westervelt

Any buyers?

Gentlemen: If you know of anyone who wants THE CONSERVATIONIST starting with Volume 1, Number 1, I have it complete, and consider that $125 would be a fair price.

Sherwood F. Marvin, Stormville

Catskill saber-tooth

Dear Sir: The Catskills has its share of saber-toothed deer. This one was shot in Earlton, by John Rolleri, proprietor of Holiday Inn, when it tried to break in for a drink one Sunday morning. The head now hangs over the bar.

Al. Sinclair, Albany

• *Looks like it needed one.—Editor*

Hybrid

Dear Sir: Yesterday a friend and myself shot a duck which we believe to be a mallard but its characteristics are not completely true of either the hen or the drake sex. When shot it was travelling with a black duck but that duck was not taken.

The mallard's head was not the usual green but a dark brown, darker than the brown of a mallard hen and nearer to the color of a black duck. The bill was olive drab which I believe is a characteristic of a mallard drake. The legs were a pale orange. The breast feathers were a rust color as on a mallard drake but not distinctively so as they were a lighter color than usual and mixed somewhat with light brown feathers. The underside of the duck was a dark, dirty gray rather than the usual silvery gray. The extreme tail feathers were of the type and color of those found on the mallard hen with a few dark green feathers in the position where the mallard drake usually carries two or three curled dark green feathers but the feathers were all straight. The wings were those of a mallard drake and there was no sign of the usual white ring around its neck.

I have removed the insides of this duck as I was not able to have it deep frozen immediately, however, otherwise the duck is fully intact and frozen. If this duck is of any use to the Department I will gladly turn it over.

I should like to have a reply as to your opinion of this duck.

Robert K. Mead, North Rose

• *From the description given in your letter your odd duck certainly sounds like a black-mallard hybrid to me.*

These two species do occasionally interbreed, and the resulting offspring, while not at all common, are not genuinely rare either. Of the many thousands of ducks we have handled, either in our banding activities or in our bag checks, I would say that of every 100 or 200 blacks or mallards we would find one hybrid. At least, the ratio is somewhere in that vicinity. We have not made any special study of this hybridization angle, but from our brood production work we know of at least one instance of this type in the wild. A released female mallard returned to the site of her liberation in the following Spring with a black drake, and they successfully reared a brood. This was near Saranac Lake several years ago.

In the game farm production of waterfowl, of course, there are even better chances of getting some hybridization, and mallards are apparently more prone to stray than some other species. Under these conditions, we have seen mallard-pintail crosses and even some we thought were mallard-canvasback. If you have, or can find, a copy of Kortright's "Ducks, Geese and Swans of North America," you will see illustrations of some of these on page 460-461.—Donald D. Foley, Waterfowl Biologist

Of guides and boats

Dear Sirs: In your Oct.-Nov., 1958 issue, page 46, heading, "The Old and the New," there is mentioned a Mitchell Sabattis. When I was a boy in 1901-1904, camping at Long Lake (Hamilton County), our guides were Charlie Sabattis (very old) and his son, Harry Sabattis. Charlie had another son, Raymond, but we saw little of him. They were of Indian stock. I never heard of Mitchell Sabattis.

I get a nostalgic ache when I recall those wonderful camping summers spent on Long Lake, the Raquette River, Cold River, Moose Pond stream and Moose Creek.

Would it be within your province to let me know what was the relationship of Mitchell to Charlie and Harry, those loyal guides and friends to us boys?

Incidentally, the Adirondack guide-boat you picture on top of page 46 does not look as sleek and slim and as fast as the guide-boats we used in 1901-1904. Seems to me the ends of our boats were more pointed and narrower, and they sure could go!

Edwin A. Stumpp, Staten Island, N. Y.

• *I never went into the genealogy of the Sabattis family but believe you can find reference to Mitchell in Donaldson's "History of the Adirondacks" (two volumes). Hochschild's volume, "Township 34," should also have some reference to Sabattis. Both these volumes should be in your local library or your librarian probably can get the loan of them from the State Library in Albany for you.*

I dug out the photo loaned us by Fox Conner, maker of the fiber glass guide-boats, and it more clearly shows the rather sharply pointed bow and stern of the old guide-boat. Our cut necessarily was small and some detail was lost in the reduction. Incidentally, Mr. Conner has written me saying he has turned over the original of the old picture to the Adirondack Museum at Blue Mountain Lake. If you haven't visited this Museum yet, do so. The Museum has a fine collection of guide-boats. The Museum also has a wonderful reference section of books, manuscripts, pamphlets, etc., where you can probably find material on the Sabattis family. —R.B.M.

Deer food

Gentlemen: Could you kindly clarify one point for me relative to the food eaten by deer?

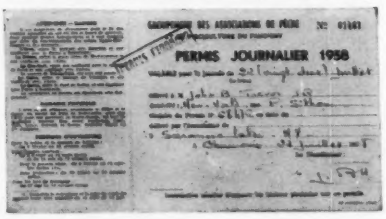
In all magazines and in hunting stories one always reads how the deer like beechnuts from the beechnut tree. However, in one of your pamphlets you indicate that they like white or arborvitae cedar trees best and beech is only a starvation or poor food.

Is that true? What exactly do they eat from the arborvitae tree?

Joe Nuzzolo, The Bronx

• *It is true that beechnuts are a favorite and nutritious food for deer. It is also true that white cedar is a favorite Winter food, all of the green foliage on this tree being subject to heavy deer browsing wherever it can be reached. It is a rich and almost complete food for deer, for in feeding experiments it was found to be capable of sustaining deer through the Winter with practically no weight loss and with no other food being provided.*

The confusion regarding the value of beechnuts vs the twigs of the beechnut tree is easily resolved. While the beechnuts are excellent and preferred food, the beech twigs are not generally palatable to deer and have little nutritive value to this animal. The twigs and young sprout growth of beech during the Winter is truly a starvation food, for when deer browse on beech twigs you can be quite sure they are desperate for food. When they do feed on beech growth, little nourishment comes from it and it acts only as filler or roughage.—E. L. Cheatum, Chief, Bureau of Game



Irrelevant

Sir: A New York State hunting and fishing license has considerably more power than even you may recognize.

Last July, while in the French Alps, I was able to give a day to trout fishing. The local authorities, when approached regarding a license, said all that was provided for aliens was an expensive one-month permit.

When, however, I presented my New York State hunting and fishing license, it appeared it was possible to "extend" this license to cover the public waters of the Haute Savoie region of France for a moderate fee, for one day of fishing.

Perhaps I should add that I did not use any "low cunning" on the authorities. I did

not produce my New York license until I had really given up the idea of getting a day's permit, and simply as identification, with the idea of getting the expensive month's permit. When I showed my N.Y.S. license, the clerk asked me why I had been so stupid as not to show this license before. I carefully explained that New York State was not part of France, but the clerk brushed aside this fact as an irrelevancy.

I attach this rather unusual permit. You will note that "Saranac Lake, N.Y." is well rendered, but "Paul Smith's" has been gallicised beyond recognition.

John B. Trevor, Jr., Paul Smith's

Hypnosis

Dear Sir: Self-hypnotism is a symptom often present in human ills that has perplexed the medical profession. Neurosis, a specific form of self-hypnotism, sometimes results in involuntary suicide. (*Time* 12/15/58, page 67.) We have been trying to establish the existence of minor mental form of fatal hunting accidents.

The victim may be anyone who is abroad in the hunting season. The inexperienced hunter is constantly conjuring up mental images of game that blend with the surroundings. A slight movement animates one of his mirages to strengthen his conviction and cause his folly to make headlines. Teasing such a hunter for having missed an easy shot is a dangerous practice that cannot be overemphasized. The life you imperil may be your own.

A pseudo elk-hunter, on the much criticised "firing line" in Montana, was shooting into a bunch of tethered horses and could be restrained only when others took him down and sat upon him. (*Saturday Evening Post*, 4/12/52).

A Maine hunter (11/20/58) must have been so completely entranced as to be oblivious to the warning shouts of his victim. No other view is tenable.

During recent wars many draftees were screened for minor emotional instabilities. The psychiatrists may have learned something that will help reduce these deplorable incidents that beset this form of recreation on every side.

Lawrie Holmes,
Northeast Harbor, Maine

Boat launching

Dear Sir: Just a few lines in regard to public fishing sites and public launching facilities that I've been reading about in THE CONSERVATIONIST and the Conservation Department has been bragging about (1,579) of the first, (302) of the second. Yet we have nearly 70 miles of waterfront on Lake Erie, (2) State parks with ramps but *No Admittance* with boats, not one public launching site and at least one-half million boat owners who have to pay dearly or beg private owners to launch their boats.

And in the wintertime get tagged by police for parking their cars on streets along the lake when they go ice fishing.

John Klimchak, Lackawanna

• *We're afraid that there is not very much we can do to make life easier for you while parking on the streets—and collecting tickets while ice fishing. That I guess is something you will have to settle with the local police.*

On boat launching sites, however, there is something we can do and we are doing it just as fast as we can get the funds with which to work. The development of lake access sites and boat launching facilities is a fairly new project in the Department on which we believe that we have made remarkable progress considering the money and manpower with which we have had to work.

As far as Lake Erie is concerned, I can see the problem you are up against with so many miles of waterfront and so few places where the public can get a boat into the water. It may be possible for the Division of Fish and Game to get something going and before too long, and possibly too, some arrangement can be made at the State parks for late season use of the existing boat launching facilities. In any event, we are passing your plea along to the people in the Division of Parks for their consideration. —Editor

"Speckled" trout

Dear Sir: About 6 weeks ago while fishing in the Grasse River at the Grasse River Club which is about 8 miles west of Cranberry Lake, I caught a 7" native trout with a skin condition that I have never seen before in my 35 years of fishing in this stream at this place.

The trout normally would have had bright orange markings but the colors were considerably dull and subdued. The fish seemed normally active but was completely covered on all parts of the body with 100 to 150 black spots of about 1/16 of an inch in diameter. These spots were slightly raised or at least were rough enough to give that impression as I touched the fish. Knowing that the fish apparently had some infection, I instinctively threw it in the brush whereas I should have brought it back to your local conservation office for inspection.

None of the members of the Club, many of whom have fished this stream for years, have ever seen a trout in this condition. I am anxious to know if you can give me any information as to what this condition might be and if it is an infection of some sort whether this might spread to other fish in the stream.

Charles A. Chappell, Syracuse

• *Although it is not possible to identify fish parasites without examination of specimens, I am reasonably certain that the condition you describe from brook trout in Grasse River was due to "black grub," a trematode parasite. This type of parasite is not communicable from one fish to another. The trematodes in the fish are inactive and are encysted. The adult state is reached if fish is swallowed by a kingfisher and eggs are produced. These hatch into an active stage which infests snails and has another reproductive stage giving rise to another active stage, called cercariae. After burrowing into skin of a fish these go into an encysted stage.*

Black grubs are very common in minnows, suckers, perch and many other species and are locally common in brook trout. Many trout streams are free from them probably due in part to lack of snail populations. The grubs are harmless to humans and do not seem to bother the fish. Enclosed is a reprint that gives further information on fish parasites.—John R. Greeley, Chief aquatic biologist

Roughage

Dear Sir: Enclosed is a stone, triangular in shape, approximately 1¼" long, the only contents in the stomach of a 12" brown trout I caught in a stream in Turin, Lewis County. I am interested to know what effect such a stone would have on a fish that size. My Dad and brother have fished for many years and have never had such an unusual find.

Annie Paczkowski, (age 14), Turin

• *Our fish biologists tell us that it is not unusual to find stones in the stomachs of trout. Ordinarily, though, they are much smaller than the one you found in the brown trout you caught. Fish will occasionally swallow hard objects, and indigestible items such as stones would remain in the stomachs. No particular trouble would be caused, however, so long as they do not interfere with the passage of more nutritious "foods."—Editor*

Credits

First cover, pages 13, 21, 22, 23, 24, 25, 26, 33, H. Wayne Trimm; second cover, Leonard Lee Rue III; 3, Norris Studio, Syracuse; 4, Roy Irving, Fred Chambers; 7, Nick Drahos, Ben O. Bradley; 8, 30, 31, Irving; 9, 10, Division of Parks; 11, N. Y. Power Authority, Trimm; 14, 15, U. B. Stone; 16, Campbell Norsgaard, Earl McGuirk; 17, Dept. of Ornithology, Cornell; 18, 19, 20, Robert L. Smith; 27, Irving, R. M. Hick; 28, Hick; 29, McGuirk; 32, John R. Greeley; 34, John E. Wilson; 35, Chambers; 38, Drahos; 39, Paul Kelsey; 40, Trimm, L. G. Stegman; 41, Ontario Dept. of F. & G.; third cover, Clayt Seagears; fourth cover, Louis A. Fuertes.

Molehill Out of a Mountain

Or How to Have Better Homes in Gardens

THE other day we felt like doing some little thing, so we decided it would be about the Mole.

The only one we know personally is a very curious character. Not only is he a mole but the variety known as the Star-nosed Mole. Of the world's funny-looking beasts, no one else goes around wearing a pink rosette of 22 little fleshy tentacles at the end of its beezer.

We found our friend in his star chamber at the end of a long tunnel out in the middle of Little Mucketymuck Swamp.

"Howdy," we said, "nice diggings you've got here. How you been feeling lately?"

"Slightly under the weather," said Mole, "but in the topographical rather than the physical sense. Anyway, I gotta problem. Fella wants to sell me a big batch of thousand-legged worms. He wants ten cents a foot or three dollars a yard and I dunno which would be cheaper—pedal or linear measure."

"Depends on whether it's front yard or back yard," we said weakly. "But tell me about you people. You know, the low down."

"Yup," said Mole, "I used to have the popped worm concession at the Tunnel of Love. I got a mountain of material, Bub."

We made only a little molehill out of his mountain——.

Moles are among the earth's most perfectly adapted mammals for their way of life—almost entirely underground.

In general, they're about half way between a mouse and a rat in size with short, broad and enormously developed front feet bearing five heavy digging claws—each like a miniature trowel.

The mole, digging at grass roots level, gets a good toe-hold with his hind feet, thrusts his front claws straight out past his head and, with a breast stroke swimming motion, literally sweeps himself forward through the earth. At short intervals he may roll over forward, heaving his muscular back against the tunnel's ceiling and making the familiar branching runways of upheaved turf.

A naturalist once figured out that a 160-pound man doing the same proportionate amount of work in one night could dig himself a tunnel nearly 48 miles long.

The mole's tunneling represents its search for food which, as might be expected, is largely composed of earthworms, grubs and similar stuff. And it takes a lot of grub to stoke the furnaces of such enormous energy. That same 160-pound man, it has beein estimated, would have to eat more than 50 pounds of food daily to stay in the same class with the mole.

Mole once was a highly popular fur despite the small size of the individual pelts and lack of durability. Millions of skins were imported annually, mostly from Europe. American mole was much less popular, one reason for its lack of favor being its inability to react to dyes as readily as its foreign cousins. The dyeing was designed mainly to darken the white leather rather than the fur itself so that the stitched seams were less likely to show through the dark fibers.

According to cutting diagrams used by manufacturers in 1920, nearly 1,000 mole skins were required to make a single full length cape. Considering the fact that captive moles have consumed earthworms at the rate of 40,000 each per year, it is apparent why it never was considered very smart to raise moles on purpose on a fur farm.

Incidentally, the velvety no-grain texture of mole fur apparently represents another of Nature's amazing designs for happier living. The fur lies flat equally well in any direction, which is fine and dandy for a beast which twists, turns and reverses engines in such cramped tunnels.

The curious Star-nosed Mole is least likely of the family to be considered in the pest class by the gardener and the greens tender at the golf links. Usually, he keeps to the mucky swamps of the bottom lands and the moist loamy edges of meandering meadow streams.

This mole is an accomplished swimmer. Under certain conditions, in fact, he is likely to spend much time foraging on the fertile mud bottoms of quiet waterways where aquatic insect life abounds. Once we caught a 24-inch brook trout containing one of these moles and a Water Shrew.

Most of the small furry creatures store quantities of food to last them through the slim pickings of Winter. Not so the moles which remain actively on the prod for meaty food all year. They merely seek the unfrosted levels of the earthworm.

The Star-nose, however, often tunnels through the snow, for his diet seems to be more omniverous than the rest of the tribe. At times he even scurries along above ground slightly arching his unusually long (for a mole) tail which in Winter becomes very fat.

Our friend's tail was indeed fat (see picture) and he could give no logical explanation.

"In Winter," he said, "my tail just plain gets fat. And you guys who live in glass houses, don't you go throwing——."

"I like your new house," we said. "How did you finance it—through the Building & Loam Association, the Soil Bank or what?"

"I don't dig you," the mole answered.

"You know, it's a very funny thing—we moles live nearly all over the world except in Australia. Lotsa worms there, too. I read a story the other day about a whole mess of Australian worms they used to feed those Platypusses they caught for the Bronx Zoo. Makes my mouth water; makes my vibrissae vibrate; makes me hungry to snap a setae soon."

We could see that the mole was about to cut short the interview and start digging up his supper. So we brushed the dirt off our jacket and said goodbye.

"Ah, but those Australians are my really truly pals," he said.

"*Your* pals?" I asked.

"Oh," said mole disappearing down the corridor in a shower of earth. "Sure —*anybody* from Down Under."

—CLAYT SEAGEARS

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"Yup," said Brother Mole, "I used to have the popped worms concession at the Tunnel of love."

Courtesy, N. Y. State Museum

Louis Agissiz Fuertes

TREE SPARROW *Spizella monticola monticola* (Gmelin)

SNOW BUNTING *Plectrophenax nivalis nivalis* (Linnaeus)